# TRANSCRIPT OF RECORD.

## SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, [redacted]1919

No. [redacted]

THE UNITED STATES OF AMERICA, APPELLANT,

vs.

UNITED STATES STEEL CORPORATION ET AL.

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF NEW JERSEY.

## VOLUME 8.

GOVERNMENT EXHIBITS.

FILED MAY 12, 1916.

GOVERNMENT EXHIBITS

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**Government Exhibit No. 342.**

(January 28, 1913.)

(Comprising pages 110 to 148 of the volume entitled:)

FIRST BIENNIAL REPORT

of the

MINNESOTA TAX COMMISSION

to the

GOVERNOR AND LEGISLATURE

of the

STATE OF MINNESOTA

FRANK L. McVEY
SAMUEL LORD
O. M. HALL
Commissioners

RUKARD HUED
Secretary

SAINT PAUL, MINNESOTA

1908

## CHAPTER VIII.

### THE TAXATION OF IRON ORE LANDS.

In its preliminary report published in 1907, the commission presented the iron ore situation, the method followed in making the reassessment, and the results of the new valuation. What is said in this chapter is in a large part a repetition of what was presented in the report referred to above; in the succeeding chapter new material has been added and the statistics brought down to date. The justification for the repetition is the general public interest in the mining lands of the state.

RESOLUTIONS OF THE HOUSE OF REPRESENTATIVES.

Three resolutions dealing with the valuation of the iron ore properties of Minnesota were introduced in the legislature of 1907. The first of these, offered on April 4th, was the resolution prepared by the joint legislative committee of the house and senate appointed to investigate the best method of taxing the iron ore lands within the state of Minnesota, pursuant to a resolution which recited, among other things, that the ore lands did not bear their just share of taxation and were grossly undervalued for that purpose. The resolution went on to say, further, that all iron ore land should be taxed on an *ad valorem* basis, and that the total taxable value of such lands should be placed between $210,000,000 and $250,000,000. On the same day Mr. Jefferson offered a resolution instructing the state board of equalization to fix the valuation of the iron ore properties at not less than $300,000,000, and further stating that copies of the resolution should be sent to the governor of the state, state auditor, and attorney general as ex-officio members of the board of equalization. These resolutions, under notice of debate, went over until another day. The third resolution, which was the only one of the three adopted, was offered on the 24th of April by Mr. Lennon, and stated that from the information gained by the report of the investigating committee on iron ore lands, "It is the sense of the House that the assessment on such lands should be raised to $225,000,000, approximately."

The passage of this resolution by the House and the presentation of the others in the legislature brought the matter of the assessment of ore lands to the consideration of the recently created tax commission.

THE BJORGE AND JEFFERSON PETITION.

Upon the adjournment of the legislature two members of the house, Messrs. Bjorge and Jefferson, presented a verified petition to the tax commission calling upon them to examine the facts and make a valuation of the holdings known as the iron ore properties. The petition is set forth as follows:

STATE CAPITOL, ST. PAUL, MINN.,

APRIL 24TH, 1907.

To the HONORABLE S. LORD, F. L. MCVEY and O. M. HALL,
Members of the Minnesota Tax Commission:

The petition of the undersigned, H. O. Bjorge and R. H. Jefferson, respectfully states and shows to your honorable body as follows, to wit:

1. That your petitioners are members of the House of Representatives, and that they have been regularly in attendance upon the thirty-fifth session of the legislature. That during all of said time they have given special attention to the proper manner of taxing the iron ore properties in the northern part of the state, so that the same might bear their just and equitable proportion of the burden of supporting the state and local governments.

2. That early in the present session of the legislature Senators Cooke, Smith, Laybourn and V. L. Johnson and Representatives Zelch, Wells, Wright, Miller and E. M. Webster were duly appointed a joint committee to investigate, on behalf of the legislature, the best methods of taxing the iron ore properties. That there was submitted to the said committee a large amount of testimony bearing upon the said iron ore properties, the amount of iron known to be in the ground, the quality and merchantability thereof; the expense of mining the same and shipping and delivering the same at the terminal markets therefor. That thereafter the said joint committee made a report to the legislature, said report being signed by all the members of said committee except Senator Johnson, setting forth their findings and recommendations.

3. That, among other things, the said joint committee found that there is now in sight on the Vermillion and Mesaba ranges alone 1,400,000,000 tons of iron ore and that in the year 1906, there was paid in all taxes upon said ore properties only the sum of $1,500,000 for all purposes, state and local, and that of the said sum approximately $196,000 was paid to the state as state taxes.

4. That the record of the testimony taken by and sub-

mitted to the said joint committee is now on file with the secretary of the Senate. That the same shows that the said iron ore properties are now and have been for many years last past grossly undervalued for purposes of taxation. That the said committee was convinced of that fact, and that one of the conclusions set forth in their said report is to the effect that the said iron properties "should be largely increased above their present valuation."

5. By reason of the premises, your petitioners, on their information and belief, further aver and charge the fact to be that the said iron ore properties and all thereof are not now and have not been during any of the years hereinafter mentioned assessed for purposes of taxation at any time more than one fifth of the value which should have been during all of said time, and which ought to be now placed upon them for purposes of taxation.

Wherefore, your petitioners respectfully pray that you will proceed under and according to Sections 854 to 858 inclusive of the Revised Laws of Minnesota for the year 1905, as amended by the terms of the act creating the Minnesota Tax Commission, of the General Laws for the year 1907, to appoint some competent citizen or citizens of the state, not a resident of either or any of the counties wherein the said iron ore properties or any part thereof are situated, as examiner or examiners to ascertain the character, location, value and ownership of the said iron ore properties and all thereof, for the purpose of securing a revaluation and reassessment of said properties and all thereof for the years from 1896 to 1906 inclusive.

Respectfully submitted,

(Signed) H. O. BJORGE,

R. H. JEFFERSON.

STATE OF MINNESOTA, }
*County of Ramsey,* } ss.:

On the 24th day of April, 1907, before me personally appeared H. O. Bjorge and R. H. Jefferson to me known to be the persons described in, and who executed, the foregoing

instrument, and acknowledged that they executed the same as their own free act and deed.

(Signed) H. O. BJORGE,
R. H. JEFFERSON.

Subscribed and sworn to before me this 24th day of April, A. D. 1907.

(Signed) C. H. MELBY,
Member of the Legislature, 17th District.
My commission expires December 31, 1908.

POWER TO MAKE REAL ESTATE ASSESSMENT IN ODD NUMBERED YEARS.

Under the law real estate assessments were made in the even numbered years. To change the values of such extensive properties raised a question of the authority of the commission or state board of equalization to alter the real property assessment of 1906. The decision of Attorney General Childs made in 1893 maintained that the assessment could not be disturbed until the next assessment period. In doubt upon this important point, the commission referred the matter to the Attorney General's office, and received the following reply, which sets forth the views of the attorney general on the question of reassessment:

July 17, 1907.

MINNESOTA TAX COMMISSION, CAPITOL, ST. PAUL, MINN.

Gentlemen: This office has for acknowledgment your favor of the 15th inst., in which you ask for the opinion of this office on the following questions:

FIRST: "Has the State Board of Equalization power and authority of revising and reconsidering the assessment of real estate in odd numbered years?"

In answer to this question, I would say that this office is of the opinion that the State Board of Equalization has power to equalize real property valuations in odd numbered years, subject to the rules enumerated in Section 863 of the Revised Laws, 1905.

We are aware that General Childs on September 9th, 1893, rendered an opinion under the same statutory provisions as those now involved, in which he took a position contrary to the foregoing, but notwithstanding our regard for his high legal attainments, we are constrained to differ with him on this point. Section 863 provided *inter alia*:

"The board shall meet, annually on the first Tuesday of September * * * and compare the returns of the assessment of the property in the several counties, and equalize the same at its true and full value, subject to the following rules:

1. They shall add to the aggregate valuation of the real property of every county, which they believe to be valued below its true and full value in money, such per cent as will bring the same to its true and full value in money.

2. They shall deduct from the aggregate valuation of the real property of every county, which they believe to be valued above its true and full value in money, such per cent as will reduce the same to its true and full value in money.

The mere fact that an improper valuation has been put on real property at the time it was listed (during the even numbered year) should not result in the continuance of the improper valuation for another year after the attention of the State Board shall have been directed to a subject which might have escaped its attention the preceding year.

SECOND: You further ask for the opinion of this office as to whether the Tax Commission under Subdivisions 4 and 5, Section 12 of Chapter 408, Laws 1907, has the power of revaluing property at any time prior to the meeting of the Board of Equalization.

In answer to this second question, I would say that it is the opinion of this office that the State Tax Commission would have the power to raise or lower the assessed valuation of any or all real and personal property, assessed for taxation for the current year, at any time after the county boards of equalization have completed their duties in regard to the

equalization thereof and prior to the meeting of the State Board of Equalization, subject to review by the latter board.

Very truly,

(Signed) E. T. YOUNG,

Attorney General.

Per C. Louis Weeks.

THE PROBLEM OF VALUATION.

The problem of taxing the iron ore properties having come before the tax commission, two questions required early consideration—one, how to ascertain the value of such properties; and the other, what basis of valuation would be accepted as a means of getting at the value. Upon the method of procedure two limitations were placed—one of the constitution and the law, in which the principles of the general property tax had been laid down; and the other, the nature and character of the industry itself.

Many opinions existed among mining men, state officers, members of the legislature, and the public generally, as to the value of ore in the ground. The values were stated to be for ore in the ground from five cents to one dollar per ton. Even mining men themselves placed the values for taxing purposes at amounts varying from two cents to thirty cents per ton. There was therefore little in the form of definite information to be had regarding the basis of taxation of iron ore properties.

The method of making the assessment of properties on the ranges was the outcome of experience. The attempts of assessors to value iron ore properties were accompanied by complaints of inequalities among mine owners that finally created a sort of de facto board of equalization, which determined the value of the different operating mines according to output. This system, while unsatisfactory from the point of view of equalization of values, was accepted by the mining men as more satisfactory than the valuation made under the assessing machinery of the local governments. Every two years the mining representatives met at Duluth and distributed the real property assessment over the operating mines according to their output. The small mines were the losers and the larger and more valuable mines the gainers

by this method of valuation. Prior to 1897, the tax levied upon the mines of the state was at the rate of one cent per ton of output. This law was repealed and the tax determined by the assessed value of the mining property. The commission therefore had no criterion by which to determine the values. Prior to 1897 the tonnage tax, after that date the valuations, continually shifted with the growth of the properties, and the distribution to mines according to output prevented the establishment of any principle of local assessment.

Extent of Iron Ranges.

A word of comment regarding the extent and method of operating the properties will bring out the difficulties of assessment more clearly. Iron ore beds in the state of Minnesota are found in St. Louis, Itasca, Lake, Cook, Otter Tail, Aitkin, Morrison and Crow Wing counties. Three distinct ranges have been opened—the Mesabi, the Vermillion, and the Cuyuna. The Mesabi range extends through the entire width of St. Louis county into Cook and Itasca counties. It is about one hundred miles in length and from two to ten miles in width. The area covered by it is about four hundred square miles. The Vermillion range extends from Ely to Tower, a distance of thirty miles. The Cuyuna range, only indefinitely ascertained, extends through the counties of Aitkin, Crow Wing and Morrison. The width of this range is unknown. A fourth body of ore has been discovered in Otter Tail county. The Vermillion range was opened in 1884, the Mesabi in 1892, and the Cuyuna in 1905. The discoveries in Otter Tail county have been made in 1907. Professor Van Hise, in speaking of the Mesabi range in his letter of transmittal of the monograph on the Mesabi to the bureau of the United States geological survey said: "Discovered only about ten years ago, in the early nineties, the Mesabi district has today no rival in its production or reserve of iron ore. The geological succession in the district, the unusual size, shape, and structure of the ore bodies, their manner of development, and the peculiar and rapid methods of exploitation of the ore, all present features of unusual scientific and economic interest." The ore body on the Vermillion range varies from 10

to 20 feet in thickness to 100 to 125 feet, and there are some instances where the depth of the ore is as great as 500 feet. It is not to be understood, however, that these ore bodies are of the same structure throughout and that obstructions of rock are not to be found running through them. The most remarkable example of ore depth has been found in the recent discoveries made in Crow Wing county, where some borings have indicated a thickness of 805 feet. This ore, however, is mixed with sand, and has a 40 per cent iron content.

METHODS OF MINING.

Three general methods of mining are employed in getting the ore out of the ground:

1. OPEN PIT.

The open pit, or steam shovel method of mining. The overburden is stripped from the ore with steam shovels, and while the thickness of the drift has in the past only been removed up to the thickness of the ore, there have been instances where even a greater depth of overburden has been removed in order to get out the ore. Tracks are built out on the ore deposits and the steam shovels make a cut through the ore. The shovel is then set over against the bank made by the recent cut and another slice is taken off and loaded onto cars, which are run into the cut already made. As the work proceeds, the deposit has the appearance of a series of terraces, and on each of these a number of steam shovels may be worked at one time. The best examples of such mining are seen in the Mountain Iron, Mahoning and Biwabik mines More than half of the ore now mined on the range was taken out by this process.

2. Milling.

A second method is known as milling. The drift of overburden is removed, as in the case of the open pit method. A shaft is sunk along the edge of the wall rock down to the level of the ore deposit and cross cuts are run into the ore from the shaft. Uprises without timbers are made and the ore received at the surface is pushed down the chutes into

cars below. It is then trammed to the shaft and hoisted to the surface. About 7 per cent of the ore is mined by this method.

3 Underground.

A third method, known as the underground, includes the systems of caving, slicing and room mining. Shafts are sunk into the ore near the wall rocks and extending pretty well down to the bottom of the deposit. Cross cuts are run diagonally and at right angles into the body of the ore. Raises are sent up to the surface of the deposit and the ore drawn in from the top by drift slicing. As the levels are removed the surface is allowed to cave in until the ore has been taken out to the base of the deposit. In the instance of room mining, openings of three or more sets called rooms, from twenty to forty feet wide, are run up from the main drift to the top of the deposit, the sides being lagged. Pillars of ore are left. The drift above is allowed to cave in, filling the rooms. The pillars are then taken out by slicing, either from above or below.*

The open pit method of mining is far the cheapest, the underground the most expensive, and the milling method intermediate. The open pit method saves all the ore and permits sorting without the expenses of lighting, timbering, and large forces of men. The open pit method is limited, however, by the grade of the road for hauling, by the extent of the ore body and the depth of the overburden. While the annual production is large, the capital required to carry on the stripping is extensive.

By the underground method there is little outlay. The mine can be worked the year round, and the operator gets a return that goes toward the expenses from the start of the enterprise.

The milling method costs less than the underground, but it has some of the disadvantages of both the underground and the open pit methods. The tendency, however, is markedly toward the increased use of the steam shovel in the mining of ores on the Mesabi.

*Leith, Mesabi Iron Bearing District, pp. 281-283.

HOLDINGS IN FEE AND LEASE.

The iron ore properties are held in fee and in lease. Ownership in fee, since the increased value of the iron properties, has in a large measure ceased to be the principal method of controlling iron properties. The investment of capital in fees creates a permanent interest charge, which mining companies are very anxious to avoid. The consequence is, that leases are made on a tonnage basis, by which the lessee agrees to pay a certain sum for every ton of ore that he takes out of the ground. The interests of the fee owner usually are guarded by the royalty on a minimum tonnage. Subleases are the rule, rather than the exception, the owner of the original lease sub-letting it to some operating company and receiving as his part of the transaction one, two, three, or even five cents on the tonnage put out by the operators.

SECURING INFORMATION.

The problem before the tax commission was how to assess these properties, vast in extent and great in value. The first step was to secure information. Consultation with state officers, the collection of books, pamphlets, maps and newspaper clippings upon the iron properties, the securing of state documents and the reports of committees, were the first steps toward getting information. After careful consideration of the situation and the problems involved, the commission sent, under date of June 18th, a list of questions to the various companies engaged in the business of iron mining in the state of Minnesota. These questions were so framed as to cover every important phase of the mining industry, and the hope and expectation was, to secure a large amount of information regarding the cost of operating, output, nature and character of ores, method of mining, and nature of ownership. The request for information was as follows:

The Tax Commission has under consideration the question of valuing for taxation purposes the iron mines and ore bearing properties located in the state. To this end and in order that there may be no injustice or discrimination, all owners of iron ore and mine operators are requested to co-

operate with the Tax Commission and furnish the following data, as of May 1, 1907:

a. Shipping Mines.

1. List and description of properties owned.
2. List, description and terms of properties leased and controlled.
3. Estimated tonnage in mine or property.
4. Classification of ore bodies.
5. Physical characteristics of ores.
6. Mining and other operating cost.
7. Value of structures and equipment.
8. Yearly shipment records, since opening of mine.
9. Annual receipts from sale of ores.
10. Amount of ore in stock pile.

b. Non-Shipping Mines.

1. List and description of properties owned.
2. List, description and terms of properties leased and controlled.
3. Estimated tonnage in mine or property.
4. Classification of ore bodies.
5. Physical characteristics of ores.
6. Mining and other operating cost.
7. Value of structures and equipment.

c. Mine Prospects.

1. List and description of properties owned.
2. List, description and terms of properties leased and controlled.
3. Estimated tonnage in property.
4. Classification of ore bodies.

The Commission will appreciate any other information that will assist in determining the value of the property.

It is the purpose of the Commission to have such property assessed and taxed on an equal basis with other property throughout the state.

The Commission desires that this information be placed in their hands on or before July 15, 1907.

Very truly yours,

(Signed) Rukard Hurd,

Secretary.

CLASSIFICATION OF PROPERTIES.

After a great deal of correspondence, the commission received late in August returns from practically every mining company engaged in operation and from individuals owning iron properties. This data was supplemented by information gathered by the commission during its visit to the range in the first half of August. Thru this visit the commission became familiar with types and locations of mines, character of ore, and general conditions existing in the mining business.

Meantime the questions of classification, analysis, and value of these properties were being considered carefully by the commission. The differences existing between mines in their geological conditions, difficulty of mining, character of the ore and the nature of mining rights made it impossible to consider all mineral properties as belonging to the same group. For the purpose of making some distinction between the different mines and prospects, five grades of operating mines were created, and four grades of prospects. These grades were determined by facts secured thru the data furnished by the mining companies and the observations of the commission. The first grade of operating mines included those that were operated at a low cost per ton and were putting out good grades of ore. A distinction was made between the mines in the first grade in that practically no mines approached the Mahoning and Hull-Rust in case of operation and character of ore. Somewhat more expensively operated mines, tho distinctly above the second grade, were placed in the 1-b class. These were mines like the Biwabik, Mountain Iron, Burt-Pool and Morris. The remaining grades of operating mines were determined by the cost of operation, returns and grades of ore. The prospect group was divided into four classes, depending upon the stage of their advancement toward an operating mine; thus the first class of prospects were properties on the verge of mining operations. Good examples of this class are to be found in the instances of the Gilbert, Canesteo, Frantz, Iroquois, and certains parts of the Hull-Rust and Mahoning properties. The second class

prospects were those properties that had not been advanced so far on the road to operating mines, but upon which drilling and testing had demonstrated the presence of ore in paying quantities. The third class consisted of forties in the neighborhood of good tonnage properties. In the fourth class the ore land acreage was placed, since it had a more or less speculative value.

HEARINGS ON TAXATION OF IRON PROPERTIES.

The last of August the commission sent notice to the owners of iron ore properties calling upon them to appear on September 5th at 10 a. m. in the rooms of the tax commission at the capitol in St. Paul and show cause why the valuations of the mining properties should not be materially increased.*

At the meeting, which was attended by representatives of practically all mine owners and operators, the commission presented its scheme of classification and a tentative list of valuations. Frank discussion and criticism followed, bringing out many valuable suggestions and much new information. The hearing was continued over to the following Monday, when the commission presented the final classification, rates, and valuation of the iron ore properties.

MEMORANDUM FOR DETERMINING VALUATION.

The factors taken under consideration in the valuation of mining properties are as follows:

1. Geological conditions.
2. Difficulty of mining.
3. Character of the ore.

AUGUST 27, 1907.

*DEAR SIR: Complaint has been made that the existing assessed valuations for purposes of taxation of the iron mining properties controlled by you is disproportionate to and below the average taxable values of other real estate in Minnesota.

Therefore you are hereby notified and requested to be and appear before this Commission at its offices in the State Capitol in the City of St. Paul, Minnesota, on Thursday, the 5th day of September, A.D. 1907, at 10 o'clock a. m., and then and there show cause, if any there be, why the said assessed valuations of said properties should not be so increased as to be substantially equal to the average assessed valuation of other real property in this state.

If it be more convenient for you to appear at any time prior to the date aforesaid, the Commission will be pleased to accommodate you in the matter.

Yours respectfully,

(Signed) FRANK L. MCVEY,
Chairman.

Attest by
RUKARD HURD
Secretary.

4. Character of mining rights.

Mining properties are divided into two grand groups—operating mines and prospects.

For the purpose of determining the valuation of operating mines, they are classed under five groups, as follows:

Class 1. (a) Properties where mining is comparatively inexpensive and the ore high grade.

(b) Properties where mining is comparatively inexpensive and the ore of lower grade.

Class 2. Properties where mining is somewhat more difficult and mining cost greater than in the case of Class 1, and the ore of mixed grade.

Class 3. Underground properties where the expense of mining is comparatively low for that kind of mining and the ore of high grade.

Class 4. Underground or milling pit properties of distinctly second grade, determined by a higher cost of mining and lower grade of ore than in the case of Class 3.

Class 5. Mines of inferior character where expenses of operation are high.

Prospects are classed under four groups, as follows:

Class 1. Lands that have been drilled and test-pitted, and where stripping of the overburden has been carried on. In other words, where the property is about to become a mine.

Class 2. Lands that have been drilled and test-pitted, and ore found in some abundance.

Class 3. Unexplored lands near good mining properties.

Class 4. Lands that have not been explored, but are in the well known ore belt.

RATES OF VALUATION—PER TON IN THE GROUND.

| | | Class 1 | Class 2 | Class 3 | Class 4 | Class 5 |
|---|---|---|---|---|---|---|
| Operating Mines... | (a) | 33c | 27c | 23c | 19c | 14c |
| | (b) | 30c | | | | |
| Prospects ..... | | 15c | 10c | 8c | $3 to $50 per acre | |

CLASSIFICATION AND RATES.

In the determination of the rates, the commission was confronted by a number of serious problems—how to get a taxable valuation of iron properties that would be fair to the state and to the owners of the properties. The rates arrived at were in the main determined by several factors:

1st. The difference between the cost of mining and the average price of ore during the last three years.

2d. By the present worth of the difference for a period of twenty years on a basis of four per cent rate of interest.

3d. By the percentage of the assessed valuation of real property in the state to the full value of such property.

The fact that the differences in mining cost vary greatly with the different properties, due to management, condition of the mine, presence of water, depth of ore, character of equipment, grades and location of ores, required the creating of more than one class of mining properties. The classes referred to in the memorandum above were created and the rates established for them were determined as far as possible by the differences between mines in cost of operation, difficulty of mining, and grade of ore. This method of valuation left much to be desired, but no better one was suggested at the hearing of mine owners, and it was the best that the commission could do under the *ad valorem* requirements of the law.

by the mining companies and the owners of iron properties
tate indicated 1,192,509,757 tons of ore. This ore is owned
e following table:

SUMMARY OF TONNAGE VALUATION

| Companies | | | Oliver Iron Min. Co. Portion | | |
|---|---|---|---|---|---|
| | Rate | Valuation | No. | Tonnage | Valuation |
| 35 | 33 | $14,251,276 | 1 | 18,185,685 | $6,001,276 |
| 33 | 30 | 19,932,876 | 2 | 61,442,923 | 18,432,876 |
| 27 | 27 | 6,797,538 | 4 | 22,676,067 | 6,122,538 |
| 29 | 23 | 32,134,497 | 15 | 83,013,290 | 22,262,255 |
| 32 | 19 | 17,653,975 | 5 | 34,492,748 | 6,553,640 |
| 34 | 14 | 14,561,749 | 5 | 60,666,159 | 8,493,283 |
| 33 | 15 | 40,779,516 | 16 | 212,522,123 | 31,878,316 |
| 29 | 10 | 20,483,518 | 34 | 182,765,260 | 18,296,519 |
| '5 | 8 | 19,490,345 | 93 | 237,004,575 | 18,960,345 |
| 00 | .. | ..... | .. | ..... | ..... |
| 37 | | $186,204,002 | 176 | 912,768,830 | $137,562,048 |

All Companies

| | No. | Tonnage | Valuation | Average Per Ton |
|---|---|---|---|---|
| ..... | 93 | 470,966,410 | $105,331,911 | $.224 |
| ..... | 169 | 721,543,347 | 80,873,091 | .112 |
| ..... | 262 | 1,192,509,757 | $186,204,002 | $.156 |

Oliver Iron Mining Co. Portion

| | No. | Tonnage | Valuation | Average Per Ton |
|---|---|---|---|---|
| ..... | 33 | 280,476,872 | $67,865,868 | $.242 |
| ..... | 143 | 632,291,958 | 69,135,180 | .109 |
| ..... | 176 | 912,768,830 | $137,001,048 | $.150 |

work of valuation, the commission had the advantage of the
nspector of state mining properties, Mr. F. A. Wildes, Jr.
lly prepared maps that the commission had secured, made it
is descriptions on the map and in addition to determine ap-
icent properties. When the task was completed, the figures
459,702, distributed among the different classes of proper-

124,464 .....

| | No. | Class | Tonnage | Valuation | Acres |
|---|---|---|---|---|---|
| ... | 2 | 1 | 43,185,685 | $14,251,276 | 200 |
| ... | 4 | 1-b | 66,442,923 | 19,932,876 | 800 |
| ... | 4 | 2 | 25,176,067 | 6,797,538 | 1,280 |
| ... | 27 | 3 | 138,845,839 | 32,134,497 | 3,329 |
| ... | 28 | 4 | 91,469,762 | 17,653,975 | 2,940 |
| ... | 28 | 5 | 105,821,134 | 14,561,749 | 1,995 |
| ... | 25 | 1 | 271,863,523 | 40,779,516 | 3,565 |
| ... | 41 | 2 | 204,635,249 | 20,483,518 | 3,950 |
| ... | 99 | 3 | 231,504,575 | 19,490,345 | 9,640 |
| ... | 44 | .. | ..... | 998,000 | 2,675 |
| ... | 4 | .. | 540,000 | 118,712 | 953 |
| ... | 1,810 | .. | ..... | 2,257,700 | 71,654 |
| ... | 2,116 | | 1,192,509,757 | $189,459,702 | 102,911 |

wn in the table above have been added the values of proper-
yed, amounting to $634,736, and the personal property as-
hese additions make a grand total for the assessment of all
928.

n ore properties in the different countries appear in the

## VALUATION OF IRON PROPERTIES AS DETERMINED SEPTEMBER 9, 1907

### SHIPPING MINES

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Personalty |
|---|---|---|---|---|---|---|
| Hull-Rust | 40 | 1 | 18,185,685 | 33 | $6,001,276 | $210,710 |
| Mahoning | 160 | 1 | 25,000,000 | 33 | 8,250,000 | 39,415 |
| Totals | 200 | | 43,185,685 | | $14,251,276 | $250,125 |

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Personalty |
|---|---|---|---|---|---|---|
| Biwabik | 120 | 1B | 5,000,000 | 30 | $1,500,000 | $25,000 |
| Burt-Pool | 240 | 1B | 9,175,538 | 30 | 2,752,661 | 39,425 |
| Morris | 120 | 1B | 28,009,813 | 30 | 8,402,944 | 36,150 |
| Mountain Iron-Aetna | 320 | 1B | 24,257,572 | 30 | 7,277,271 | 221,680 |
| Totals | 800 | | 66,442,923 | | $19,932,876 | $322,255 |

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Personalty |
|---|---|---|---|---|---|---|
| Fayal | 840 | 2 | 15,313,587 | 27 | $4,134,669 | $150,100 |
| †Virginia-Lone Jack | 40 | 2 | 2,418,000 | 27 | 652,860 | ..... |
| †Virginia-Ohio | 80 | 2 | 4,944,480 | 27 | 1,335,009 | ..... |
| Stevenson | 320 | 2 | 2,500,000 | 27 | 675,000 | 25,915 |
| †Virginia | ... | .. | ..... | 27 | ..... | 60,780 |
| Totals | 1,280 | | 25,176,067 | | $6,797,538 | $236,795 |

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Personalty |
|---|---|---|---|---|---|---|
| Adams | 280 | 3 | 16,150,248 | 23 | $3,714,557 | $361,620 |
| Adams-Spruce (Cloquet, Vega) | 240 | 3 | 20,987,663 | 23 | 4,827,162 | 235,930 |
| Albany | 120 | 3 | 6,574,000 | 23 | 1,512,020 | 8,386 |
| Bessemer | 80 | 3 | 1,010,000 | 23 | 232,300 | 29,055 |
| Cass (Cincinnati) | 80 | 3 | 75,000 | 23 | 17,250 | 434 |
| Chandler | 80 | 3 | 202,469 | 23 | 46,568 | 92,160 |
| Chisholm | 80 | 3 | 6,503,089 | 23 | 1,495,711 | 95,785 |
| Clark | 80 | 3 | 3,926,980 | 23 | 903,146 | 92,535 |
| Commodore | 40 | 3 | 2,100,000 | 23 | 483,000 | 20,460 |
| Day | 80 | 3 | 7,943,698 | 23 | 1,827,050 | ..... |
| Elba | 120 | 3 | 1,690,270 | 23 | 388,762 | 39,031 |
| Franklin | 40 | 3 | 48,000 | 23 | 11,040 | 5,260 |
| Glen | 120 | 3 | 7,605,602 | 23 | 1,749,289 | 70,383 |
| Grant | 160 | 3 | 6,000,000 | 23 | 1,380,000 | 60,000 |
| Higgins-McEwan | 135 | 3 | 3,572,285 | 23 | 821,626 | 66,053 |
| *Jordan | 80 | 3 | ..... | 23 | 200,000 | 2,780 |
| Leonard | 80 | 3 | 9,471,281 | 23 | 2,178,394 | 3,000 |
| Lincoln | 160 | 3 | 1,800,000 | 23 | 414,000 | 121,095 |
| Miller | 80 | 3 | 2,500,000 | 23 | 575,000 | 84,721 |
| Minorca | 160 | 3 | 369,000 | 23 | 84,870 | 44,903 |
| Pillsbury | 160 | 3 | 3,791,746 | 23 | 872,102 | 14,800 |
| Pioneer | 160 | 3 | 5,286,333 | 23 | 1,215,857 | 229,256 |
| Savoy-Sibley | 194 | 3 | 1,514,695 | 23 | 348,379 | 100,013 |
| Sellers | 80 | 3 | 15,767,420 | 23 | 3,626,521 | 3,145 |
| Shenango | 160 | 3 | 11,000,000 | 23 | 2,530,000 | 148,395 |
| Scudan | 200 | 3 | 694,298 | 23 | 159,688 | 31,593 |
| Zenith | 80 | 3 | 2,261,762 | 23 | 520,205 | 77,830 |
| Totals | 3,329 | | 138,345,839 | | $32,134,497 | $2,038,623 |

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Personalty |
|---|---|---|---|---|---|---|
| Agnew | 40 | 4 | 4,000,000 | 19 | $760,000 | $5,175 |
| Alberta | 160 | 4 | 80,000 | 19 | 15,200 | ..... |
| **Brunt | 160 | 4 | 4,580,514 | 19 | 570,000 | 57,551 |
| Columbia | 40 | 4 | 2,500,000 | 19 | 475,000 | ..... |
| Cyprus | 80 | 4 | 500,000 | 19 | 95,000 | ..... |
| Fowler | 40 | 4 | 250,000 | 19 | 47,500 | 5,998 |
| Frantz | 40 | 4 | 2,000,000 | 19 | 380,000 | 2,500 |
| Genoa | 200 | 4 | 1,837,786 | 19 | 349,199 | 53,684 |
| Hawkins | 160 | 4 | 7,000,000 | 19 | 1,330,000 | 9,004 |
| Iroquois | 120 | 4 | 250,000 | 19 | 47,500 | 35,170 |
| **Jennings | 80 | 4 | 25,000 | 19 | 25,000 | ..... |
| Kinney | 120 | 4 | 5,500,000 | 19 | 1,045,000 | 22,210 |
| Laura | 40 | 4 | 1,500,000 | 19 | 285,000 | 14,230 |
| Leetonia | 80 | 4 | 5,000,000 | 19 | 950,000 | ..... |
| Longyear | 40 | 4 | 4,500,000 | 19 | 855,000 | ..... |
| Meadow | 80 | 4 | 400,000 | 19 | 76,000 | 2,856 |
| Myers | 80 | 4 | 4,670,446 | 19 | 887,384 | 57,529 |
| Mohawk | 40 | 4 | 1,575,000 | 19 | 299,250 | 44,786 |
| *St. James | 120 | 4 | ..... | 19 | 450,000 | 6,060 |

VALUATION OF IRON PROPERTIES AS DETERMINED SEPTEMBER 9, 1907 -Continued

SHIPPING MINES

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Perso |
|---|---|---|---|---|---|---|
| St. Paul | 80 | 4 | 3,000,000 | 19 | $570,000 | $4 |
| Stephens | 280 | 4 | 27,586,656 | 19 | 5,241,464 | 5 |
| Troy | 40 | 4 | 461,500 | 19 | 87,685 | 3 |
| Utica | 100 | 4 | 1,303,000 | 19 | 247,570 | 4 |
| Victoria | 80 | 4 | 327,000 | 19 | 62,130 | 4 |
| Wacoutah | 160 | 4 | 5,000,000 | 19 | 950,000 | 1 |
| Webb | 120 | 4 | 7,500,000 | 19 | 1,425,000 | ..... |
| Winnifred | 40 | 4 | 147,860 | 19 | 28,093 | 2 |
| *Yates | 320 | 4 | ..... | 19 | 100,000 | 1 |
| Totals | 2,940 | | 91,494,762 | | $17,653,975 | $587 |

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Person |
|---|---|---|---|---|---|---|
| Adriatic | 30 | 5 | 1,000,000 | 14 | $140,000 | $18 |
| *Ajax (Kanawha) | 160 | 5 | 2,000 | 14 | 10,000 | ..... |
| Corsica | 120 | 5 | 3,460,000 | 14 | 484,400 | 47 |
| Crosby | 80 | 5 | 350,000 | 14 | 49,000 | 41 |
| **Croxton | 45 | 5 | 525,076 | 14 | 150,000 | 47 |
| Duluth | 40 | 5 | 340,664 | 14 | 47,693 | |
| Hector (Hale) | 40 | 5 | 250,000 | 14 | 35,000 | |
| **Hobart | 40 | 5 | 1,837,317 | 14 | 140,000 | 7 |
| Holland | 40 | 5 | 18,000 | 14 | 2,520 | |
| Kellogg | 40 | 5 | 2,443,500 | 14 | 342,090 | 3 |
| La Belle | 80 | 5 | 100,000 | 14 | 14,000 | 20 |
| Larkin (Tesora) | 40 | 5 | 400,000 | 14 | 56,000 | 9 |
| La Rue | 160 | 5 | 3,500,000 | 14 | 490,000 | 64 |
| Malta | 80 | 5 | 47,700 | 14 | 6,678 | 31 |
| Mayas | 40 | 5 | 70,000 | 14 | 9,800 | 1 |
| Monroe-Tener | 160 | 5 | 38,938,770 | 14 | 5,451,428 | 113 |
| Morrow | 40 | 5 | 50,000 | 14 | 7,000 | |
| **Nassau | 80 | 5 | 3,908,682 | 14 | 300,000 | 2 |
| Pearce | 40 | 5 | 65,000 | 14 | 9,100 | 16 |
| Penobscot | 40 | 5 | 4,404,600 | 14 | 616,644 | ..... |
| Pettit | 40 | 5 | 780,000 | 14 | 109,200 | 23 |
| St. Clair | 40 | 5 | 2,055,120 | 14 | 287,717 | ..... |
| Sharon | 120 | 5 | 14,927,005 | 14 | 2,089,801 | 14 |
| Susquehanna | 80 | 5 | 26,000,000 | 14 | 3,640,000 | 49 |
| *Williams (No. Cincinnati) | 80 | 5 | ..... | 14 | 25,000 | |
| Wills | 160 | 5 | 210,000 | 14 | 29,400 | 1 |
| Yawkey | 40 | 5 | 137,700 | 14 | 19,278 | |
| Totals | 1,955 | | 105,821,134 | | $14,561,749 | $517 |

TONNAGE PROSPECTS

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Perso |
|---|---|---|---|---|---|---|
| Adams-North Dev | 40 | 1 | 7,305,625 | 15 | $1,095,844 | ..... |
| Bangor | 80 | 1 | 2,705,400 | 15 | 405,810 | |
| Canesteo | 480 | 1 | 10,580,564 | 15 | 1,587,084 | 126 |
| Culver | 40 | 1 | 4,446,194 | 15 | 666,929 | ..... |
| D'Autremont | 80 | 1 | 4,442,608 | 15 | 666,391 | ..... |
| Fay | 40 | 1 | 6,500,000 | 15 | 975,000 | ..... |
| Gilbert-Bender | 160 | 1 | 11,095,452 | 15 | 1,664,318 | 66 |
| Hanna | 160 | 1 | 600,000 | 15 | 90,000 | ..... |
| Hull-Rust | 160 | 1 | 49,229,409 | 15 | 7,384,402 | ..... |
| Hull-Rust | 200 | 1 | 46,364,963 | 15 | 6,954,744 | ..... |
| Leonidas | 320 | 1 | 4,324,382 | 15 | 648,657 | ..... |
| McKinley | 320 | 1 | 1,542,670 | 15 | 231,400 | 12 |
| Mahoning | 220 | 1 | 48,000,000 | 15 | 7,200,000 | ..... |
| Mariska | 80 | 1 | 200,000 | 15 | 30,000 | 2 |
| Mesabi Chief | 120 | 1 | 7,172,100 | 15 | 1,075,815 | ..... |
| †Virginia-Missabe Mountain | 160 | 1 | 10,154,433 | 15 | 1,523,165 | ..... |
| Monica | 40 | 1 | 200,000 | 15 | 30,000 | 1 |
| Moose | 80 | 1 | 9,000,000 | 15 | 1,350,000 | ..... |
| Niles-Hartley | 80 | 1 | 6,848,099 | 15 | 1,027,214 | 68 |
| Norman | 40 | 1 | 5,363,442 | 15 | 804,516 | ..... |
| Onondoga | 25 | 1 | 400,000 | 15 | 60,000 | 2 |
| Sauntry-Alpena | 360 | 1 | 31,652,182 | 15 | 4,747,827 | ..... |
| Shaw | 80 | 1 | 3,000,000 | 15 | 450,000 | ..... |
| Spring | 80 | 1 | 250,000 | 15 | 37,500 | |
| Syracuse | 120 | 1 | 486,000 | 15 | 72,900 | 11 |
| Totals | 3,565 | | 271,863,523 | | $40,779,516 | $292 |

** Arbitrary valuation. No tonnage report until Nov. 7, 1907.
* Arbitrary valuation. No tonnage report.
† Lone Jack, Ohio and Missabe Mountain mines form Virginia mine.

VALUATION OF IRON PROPERTIES AS DETERMINED SEPTEMBER 9, 1907--Continued

TONNAGE PROSPECTS

| Name of Property | Acres | Class | Tonnage | Rate | Valuation | Perso |
|---|---|---|---|---|---|---|
| Agnew No. 2 | 40 | 2 | 5,802,988 | 10 | $580,299 | ..... |
| Agnew No. 3 | 120 | 2 | 9,259,700 | 10 | 925,970 | ..... |
| Alworth Lands | 80 | 2 | 623,366 | 10 | 480,633 | ..... |
| Alworth | 80 | 2 | 4,806,333 | 10 | 62,337 | ..... |
| Biwabik Additional | 40 | 2 | 100,000 | 10 | 10,000 | ..... |
| Burt Lands No. 2 | 120 | 2 | 10,982,618 | 10 | 1,098,261 | ..... |
| Canton | 200 | 2 | 3,100,000 | 10 | 310,000 | ..... |
| Chisholm | 80 | 2 | 3,786,021 | 10 | 378,602 | ..... |
| Cleveland Cliffs | 80 | 2 | 300,000 | 10 | 30,000 | ..... |
| Elba, 26-58-17 | 160 | 2 | 2,500,000 | 10 | 250,000 | ..... |
| Forester | 200 | 2 | 7,406,487 | 10 | 740,648 | ..... |
| Gross | 80 | 2 | 500,000 | 10 | 50,000 | ..... |
| G. G. Hartley | 40 | 2 | 7,047,727 | 10 | 704,772 | ..... |
| Hibbing Townsite | 80 | 2 | 29,074,200 | 10 | 2,907,420 | ..... |
| Higgins No. 1 | 80 | 2 | 1,300,000 | 10 | 130,000 | ..... |
| Hull-Rust | 80 | 2 | 5,151,962 | 10 | 515,196 | ..... |
| Humphreys | 80 | 2 | 4,279,560 | 10 | 427,956 | ..... |
| Iron Chief | 240 | 2 | 2,822,509 | 10 | 282,250 | ..... |
| Knox | 40 | 2 | 876,728 | 10 | 87,673 | ..... |
| Kosmeri | 80 | 2 | 9,312,947 | 10 | 931,294 | ..... |
| Minnewas | 320 | 2 | 7,000,000 | 10 | 700,000 | ..... |
| North Dev., 4-58-17 | 40 | 2 | 1,154,195 | 10 | 115,419 | ..... |
| N. W. I. No. 2 | 80 | 2 | 2,035,290 | 10 | 203,529 | ..... |
| N. W. I. No. 3 | 40 | 2 | 1,741,369 | 10 | 174,137 | ..... |
| Oliver, 26-58-17 | 80 | 2 | 92,537 | 10 | 9,253 | ..... |
| Oliver, 26-58-17 | 160 | 2 | 942,526 | 10 | 94,252 | ..... |
| Penobscot | 160 | 2 | 7,644,629 | 10 | 764,462 | ..... |
| Republic | 160 | 2 | 186,261 | 10 | 18,626 | ..... |
| Rouchleau | 80 | 2 | 26,413,000 | 10 | 2,641,300 | ..... |
| Schupp | 40 | 2 | 504,297 | 10 | 50,429 | ..... |
| Scranton | 120 | 2 | 17,107,000 | 10 | 1,710,700 | ..... |
| Sheridan | 120 | 2 | 4,322,347 | 10 | 432,235 | ..... |
| Snivley | 80 | 2 | 1,320,072 | 10 | 132,007 | ..... |
| South Agnew | 80 | 2 | 10,318,055 | 10 | 1,031,805 | ..... |
| Sweeney | 80 | 2 | 1,892,979 | 10 | 189,298 | ..... |
| Tioga | 40 | 2 | 1,200,000 | 10 | 120,000 | ..... |
| Union | 40 | 2 | 2,100,000 | 10 | 210,000 | $19, |
| Wallace-Moon | 40 | 2 | 564,608 | 10 | 56,461 | ..... |
| Weed | 40 | 2 | 254,867 | 10 | 25,487 | ..... |
| Whiteside | 120 | 2 | 8,808,071 | 10 | 880,807 | ..... |
| *Whiteside-Patterson | 30 | 2 | ..... | 10 | 20,000 | ..... |
| Totals | 3,950 | | 204,635,249 | | $20,483,518 | $19, |

| Name of Property and Description | Acres | Class | Tonnage | Rate | Valuation | Persona |
|---|---|---|---|---|---|---|
| J. B. Adams, 27-58-20 | 160 | 3 | 17,611,443 | 8 | $1,408,915 | ..... |
| Alexander, 13-57-22 | 40 | 3 | 200,000 | 8 | 16,000 | ..... |
| Arcturus, 13, 24-56-24 | 200 | 3 | 2,148,379 | 8 | 171,870 | ..... |
| Atlas No. 2, 32-58-20 | 40 | 3 | 800,317 | 8 | 64,025 | ..... |
| Auburn, 17, 20-58-17 | 120 | 3 | 1,555,800 | 8 | 124,464 | ..... |
| Buckeye, 36-56-25 | 480 | 3 | 765,806 | 8 | 61,264 | ..... |
| Carson Lake, 10-57-21 | 40 | 3 | 4,088,640 | 8 | 327,091 | ..... |
| Chemung, 27-58-20 | 40 | 3 | 2,740,218 | 8 | 219,217 | ..... |
| Chisholm No. 2, 15-58-19 | 200 | 3 | 1,875,319 | 8 | 150,025 | ..... |
| Chisholm No. 3, 9-57-21 | 40 | 3 | 654,461 | 8 | 52,359 | ..... |
| Clarion, 24-57-22 | 40 | 3 | 2,754,372 | 8 | 220,349 | ..... |
| Crescent, 22-58-20 | 40 | 3 | 1,950,000 | 8 | 156,000 | ..... |
| Donora, 27, 28-59-15 | 280 | 3 | 6,921,679 | 8 | 553,734 | ..... |
| Edmund, 14, 23-57-22 | 80 | 3 | 2,902,208 | 8 | 232,176 | ..... |
| Enterprise, 5-58-17 | 40 | 3 | 4,470,623 | 8 | 357,650 | ..... |
| Fletcher, 29-56-24 | 40 | 3 | 311,614 | 8 | 24,929 | ..... |
| Gross, 20-56-23 | 160 | 3 | 1,805,997 | 8 | 144,479 | ..... |
| Great Western, 17-58-17 | 40 | 3 | 5,103,305 | 8 | 408,264 | ..... |
| **Helmer, 14-58-19 | 40 | 3 | 1,000,000 | 8 | 10,000 | ..... |
| Hill, 2-58-18 | 80 | 3 | 297,335 | 8 | 23,786 | ..... |
| Holman, 21, 22-56-24 | 160 | 3 | 6,339,264 | 8 | 507,141 | $67, |
| La Belle, 15-58-19 | 40 | 3 | 4,089,912 | 8 | 327,192 | ..... |
| Lamberton, 3-57-21 | 40 | 3 | 151,847 | 8 | 12,148 | ..... |
| Lewis, 29-56-24 | 40 | 3 | 957,369 | 8 | 76,589 | ..... |
| Longyear No. 3, 6-57-20 | 80 | 3 | 3,340,843 | 8 | 267,267 | ..... |
| Myers-Niles, 27-58-20 | 120 | 3 | 6,056,840 | 8 | 484,547 | ..... |

* Arbitrary valuation. No tonnage report.
** Arbitrary valuation. No tonnage report until Dec. 3, 1907.

VALUATION OF IRON PROPERTIES AS DETERMINED SEPTEMBER 9, 1907- Continued

TONNAGE PROSPECTS

| Name of Property and Description | Acres | Class | Tonnage | Rate | Valuation | Perec |
|---|---|---|---|---|---|---|
| Midway, 10-58-19 | 240 | 3 | 1,503,114 | 8 | $120,249 | ..... |
| Mora, 14-57-21 | 80 | 3 | 200,000 | 8 | 16,000 | ..... |
| N. W. I., 2-57-21 | 40 | 3 | 760,818 | 8 | 60,865 | ..... |
| Nelson, 15-56-23 | 80 | 3 | 350,896 | 8 | 28,071 | ..... |
| Neville, 15-58-19 | 40 | 3 | 1,501,865 | 8 | 120,149 | ..... |
| Neville, 34-58-20 | 120 | 3 | 2,772,654 | 8 | 221,812 | ..... |
| Niagara, 12-57-21 | 120 | 3 | 544,863 | 8 | 43,589 | ..... |
| Oliver, 30-58-17 | 120 | 3 | 175,000 | 8 | 14,000 | ..... |
| Oliver, 31, 32-59-17 | 120 | 3 | 924,206 | 8 | 73,936 | ..... |
| Oliver, 6-58-15 | 40 | 3 | 2,336,333 | 8 | 186,906 | ..... |
| Oliver, 19-59-14 | 40 | 3 | 352,986 | 8 | 28,239 | ..... |
| Oliver, 21-59-14 | 40 | 3 | 997,878 | 8 | 79,831 | ..... |
| Oliver, 21-59-14 | 40 | 3 | 399,635 | 8 | 31,971 | ..... |
| Oliver, 21-59-14 | 40 | 3 | 775,115 | 8 | 62,009 | ..... |
| Oliver, 21-59-14 | 80 | 3 | 472,882 | 8 | 37,830 | ..... |
| Oliver, 30-59-14 | 40 | 3 | 550,211 | 8 | 44,017 | ..... |
| Oliver, 36-59-18 | 160 | 3 | 158,222 | 8 | 12,658 | ..... |
| Oliver, 36-59-18 | 160 | 3 | 2,562,262 | 8 | 204,981 | ..... |
| Oliver, 11-58-19 | 160 | 3 | 234,663 | 8 | 18,773 | ..... |
| Oliver, 11, 12-58-19 | 160 | 3 | 749,669 | 8 | 59,976 | ..... |
| Oliver, 13-58-19 | 120 | 3 | 419,541 | 8 | 33,563 | ..... |
| Oliver, 5-57-20 | 80 | 3 | 1,613,170 | 8 | 129,054 | ..... |
| Oliver, 7-57-20 | 80 | 3 | 4,179,506 | 8 | 334,360 | ..... |
| Oliver, 7-57-20 | 40 | 3 | 4,367,474 | 8 | 349,398 | ..... |
| Oliver, 22-58-20 | 80 | 3 | 1,557,268 | 8 | 124,581 | ..... |
| Oliver, 23-58-20 | 40 | 3 | 5,545,223 | 8 | 443,618 | ..... |
| Oliver, 24-58-20 | 80 | 3 | 1,406,031 | 8 | 112,482 | ..... |
| Oliver, 25-58-20 | 80 | 3 | 859,976 | 8 | 68,798 | ..... |
| Oliver, 27-58-20 | 80 | 3 | 6,750,945 | 8 | 540,076 | ..... |
| Oliver, 27-58-20 | 40 | 3 | 1,797,945 | 8 | 143,836 | ..... |
| Oliver, 28-58-20 | 40 | 3 | 3,776,600 | 8 | 302,128 | ..... |
| Oliver, 28-58-20 | 40 | 3 | 900,000 | 8 | 72,000 | ..... |
| Oliver, 35-58-21 | 40 | 3 | 1,606,956 | 8 | 128,556 | ..... |
| Oliver, 13-57-22 | 120 | 3 | 66,675 | 8 | 5,334 | ..... |
| Oliver, 23-57-22 | 80 | 3 | 982,077 | 8 | 78,566 | ..... |
| Oliver, 23, 26-57-22 | 200 | 3 | 5,963,463 | 8 | 477,077 | ..... |
| Oliver, 24-57-22 | 80 | 3 | 7,400,101 | 8 | 592,008 | ..... |
| Oliver, 24-57-22 | 80 | 3 | 728,323 | 8 | 58,265 | ..... |
| Oliver, 24-57-22 | 80 | 3 | 5,229,083 | 8 | 418,326 | ..... |
| Oliver, 24-57-22 | 40 | 3 | 1,483,626 | 8 | 118,690 | ..... |
| Oliver, 24-57-22 | 80 | 3 | 322,167 | 8 | 25,773 | ..... |
| Oliver, 28-57-22 | 40 | 3 | 333,871 | 8 | 26,709 | ..... |
| Oliver, 29-57-22 | 40 | 3 | 137,899 | 8 | 11,032 | ..... |
| Oliver, 10-56-23 | 80 | 3 | 656,366 | 8 | 52,509 | ..... |
| Oliver, 16-56-23 | 640 | 3 | 23,444,492 | 8 | 1,875,559 | ..... |
| Oliver, 15, 22-56-24 | 200 | 3 | 1,666,700 | 8 | 133,336 | ..... |
| Oliver, 20-56-24 | 40 | 3 | 200,000 | 8 | 16,000 | ..... |
| Oliver, 21-56-24 | 40 | 3 | 200,000 | 8 | 16,000 | ..... |
| Oliver, 29-56-24 | 80 | 3 | 1,408,369 | 8 | 112,669 | ..... |
| Oliver, 2-55-25 | 40 | 3 | 323,320 | 8 | 25,865 | ..... |
| Oliver, 2-55-25 | 80 | 3 | 561,001 | 8 | 44,880 | ..... |
| Oliver, 3-55-25 | 40 | 3 | 651,592 | 8 | 52,127 | ..... |
| Oliver, 3-55-25 | 40 | 3 | 1,226,160 | 8 | 98,092 | ..... |
| Oliver, 13-55-26 | 80 | 3 | 617,487 | 8 | 49,398 | ..... |
| Oliver, 13-55-26 | 80 | 3 | 227,543 | 8 | 18,203 | ..... |
| Palmer, 14-58-20 | 40 | 3 | 859,629 | 8 | 68,770 | ..... |
| Parker No. 1, 11-57-21 | 80 | 3 | 4,119,148 | 8 | 329,532 | ..... |
| Park Lot, 31-58-17 | 40 | 3 | 40,000 | 8 | 3,200 | ..... |
| Pillsbury Addn., 6-57-20 | 40 | 3 | 1,245,463 | 8 | 99,637 | ..... |
| Republic, 23-57-22 | 40 | 3 | 1,000,000 | 8 | 80,000 | ..... |
| St. Anthony, 29-58-20 | 80 | 3 | 1,903,797 | 8 | 152,304 | ..... |
| St. Anthony No. 2, 32-58-20 | 40 | 3 | 918,766 | 8 | 73,501 | ..... |
| Shenango No. 2-15-58-19 | 40 | 3 | 4,200,000 | 8 | 336,000 | ..... |
| Snowball, 15-56-23 | 160 | 3 | 31,479 | 8 | 2,518 | ..... |
| Sparta Townsite, 34-58-17 | 80 | 3 | 1,676,672 | 8 | 134,134 | ..... |
| Stephens No.Dev., 23, 25, 26-59-15 | 280 | 3 | 11,404,318 | 8 | 912,345 | ..... |
| W. M. L. No. 1, 10-57-21 | 40 | 3 | 1,567,404 | 8 | 125,392 | ..... |
| Walker-Hill, 21, 28, 29-56-24 | 200 | 3 | 1,201,364 | 8 | 96,130 | ..... |
| Walker-Hill No. 1, 29-56-24 | 160 | 3 | 9,261,198 | 8 | 740,895 | ..... |
| Walker-Hill No. 3, 31-56-24 | 80 | 3 | 113,334 | 8 | 9,066 | ..... |
| Wanless, 16-58-19 | 320 | 3 | 3,298,434 | 8 | 263,874 | ..... |
| Wayne, 1-56-23 | 40 | 3 | 852,508 | 8 | 68,200 | ..... |
| Western, 6-57-17 | 40 | 3 | 693,366 | 8 | 55,469 | ..... |
| West Mesaba, 27-58-20 | 80 | 3 | 12,033,916 | 8 | 962,713 | ..... |
| Wright, 11-57-21 | 40 | 3 | 255,676 | 8 | 20,454 | ..... |
| Totals | 9,640 | | 244,504,575 | | $19,490,345 | $6 |

VALUATION OF IRON PROPERTIES AS DETERMINED SEPTEMBER 9, 1907--Continued

ACREAGE PROSPECTS

| Name of Property | Description | Acres | Class | Valuation | Personal |
|---|---|---|---|---|---|
| Atlas | 32-58-20 | 40 | 3 | $10,000 | ..... |
| Boeing | 12-57-21 | 40 | 3 | 20,000 | ..... |
| Bovey Group No. 1 | 1-55-25 | 160 | 3 | 80,000 | ..... |
| Burrows | 3-57-21 | 40 | 3 | 15,000 | ..... |
| Burrows No. 2 | 3-57-21 | 40 | 3 | 20,000 | ..... |
| Clark | 32-58-20 | 40 | 3 | 10,000 | ..... |
| Crete | 32-58-20 | 40 | 3 | 70,000 | ..... |
| G. N. | 2-57-21 | 40 | 3 | 10,000 | ..... |
| Mahoning No. 6 | 8-57-21 | 120 | 3 | 20,000 | ..... |
| Mahoning No. 4 | 3, 10-57-21 | 80 | 3 | 100,000 | ..... |
| Mahoning No. 5 | 10-57-21 | 160 | 3 | 105,000 | ..... |
| Mahoning | 35-58-21 | 80 | 3 | 10,000 | ..... |
| Mora | 14-57-21 | 120 | 3 | 20,000 | ..... |
| Old Forest | 13-57-22 | 80 | 3 | 2,000 | ..... |
| Oliver | 4-58-15 | 40 | 3 | 20,000 | ..... |
| Oliver | 4-58-15 | 40 | 3 | 20,000 | ..... |
| Oliver | 5-57-20 | 40 | 3 | 10,000 | ..... |
| Oliver | 13-58-20 | 40 | 3 | 10,000 | ..... |
| Oliver | 13-58-20 | 80 | 3 | 20,000 | ..... |
| Oliver | 23-58-20 | 80 | 3 | 20,000 | ..... |
| Oliver | 23-58-20 | 40 | 3 | 10,000 | ..... |
| Oliver | 23-58-20 | 40 | 3 | 20,000 | ..... |
| Oliver | 23-58-20 | 80 | 3 | 20,000 | ..... |
| Oliver | 24-58-20 | 40 | 3 | 15,000 | ..... |
| Oliver | 26-58-20 | 40 | 3 | 10,000 | ..... |
| Oliver | 29-58-20 | 40 | 3 | 15,000 | ..... |
| Oliver | 32-58-20 | 40 | 3 | 8,000 | ..... |
| Oliver | 32-58-20 | 80 | 3 | 20,000 | ..... |
| Oliver | 32-58-20 | 40 | 3 | 10,000 | ..... |
| Oliver | 33-58-20 | 160 | 3 | 40,000 | ..... |
| Oliver | 35-58-21 | 40 | 3 | 15,000 | ..... |
| Parker No. 2 | 11-57-21 | 40 | 3 | 15,000 | ..... |
| Parker No. 3 | 11-57-21 | 40 | 3 | 15,000 | ..... |
| Pontiac | 32-58-20 | 120 | 3 | 28,000 | ..... |
| Republic | 2-58-18 | 40 | 3 | 20,000 | ..... |
| Richards | 32-58-20 | 40 | 3 | 10,000 | ..... |
| St. Anthony No. 3 | 32-58-20 | 40 | 3 | 10,000 | ..... |
| Smith | 2-57-21 | 40 | 3 | 40,000 | ..... |
| Syn | 13-58-20 | 35 | 3 | 10,000 | ..... |
| Wright-Davis | 2-57-21 | 40 | 3 | 10,000 | ..... |
| Wright-Davis | 3-57-21 | 40 | 3 | 20,000 | ..... |
| Wright-Davis | 10-57-21 | 40 | 3 | 15,000 | ..... |
| Wright-Davis | 11-57-21 | 80 | 3 | 30,000 | ..... |
| Totals | | 2,675 | | $998,000 | ..... |

UNCLASSED PROPERTIES

| Name of Property | Description | Acres | Tonnage | Valuation | Personal |
|---|---|---|---|---|---|
| *Shagawa | 30-63-11 | 313 | ..... | $87,500 | $1, |
| *Chisholm | 1-46-29 | 160 | ..... | 6,400 | ..... |
| Cuyuna | 3, 10-45-29 | 320 | 405,000 | 13,200 | ..... |
| ..... | 8-45-29 | 160 | 135,000 | 11,612 | ..... |
| Totals | | 953 | 540,000 | $118,712 | $1, |

MESABA RANGE IRON LANDS

| County | Assessment District | No. Properties | Acres | Valuation | Personal |
|---|---|---|---|---|---|
| St. Louis | Town of Mesaba | 184 | 7,407.55 | $124,290 | ..... |
| St. Louis | Village of Mesaba | 4 | 160.00 | 6,800 | ..... |
| St. Louis | Town of White | 174 | 6,955.18 | 146,160 | ..... |
| St. Louis | Unorganized Town, 59-17 | 35 | 1,433.92 | 114,900 | ..... |
| St. Louis | Village of Aurora | 35 | 1,383.25 | 15,500 | ..... |
| St. Louis | Town of Biwabik | 60 | 2,415.88 | 23,540 | ..... |
| St. Louis | Village of McKinley | 3 | 120.00 | 2,700 | ..... |
| St. Louis | Village of Biwabik | 3 | 120.00 | 1,400 | ..... |
| St. Louis | Town of Fayal | 41 | 1,604.48 | 16,760 | ..... |
| St. Louis | Town of Missabe Mtn | 76 | 3,035.59 | 82,560 | ..... |
| St. Louis | Town of Nichols | 185 | 7,382.97 | 96,180 | ..... |
| St. Louis | City of Virginia | 60 | 2,386.60 | 54,720 | ..... |
| St. Louis | Unorganized Town, 58½-17 | 10 | 156.29 | 29,900 | ..... |
| St. Louis | Village of Hibbing | 21 | 814.49 | 209,000 | ..... |

LUATION OF IRON PROPERTIES AS DETERMINED SEPTEMBER 9, 1907--Continued

MESABA RANGE IRON LANDS

| County | Assessment District | No. Properties | Acres | Valuation | Pers |
|---|---|---|---|---|---|
| St. Louis | Town of Stuntz | 257 | 10,272.93 | 337,480 | ..... |
| St. Louis | Village of Buhl | 4 | 160.00 | 22,240 | ..... |
| St. Louis | Town of Great Scott | 114 | 4,588.15 | 35,740 | ..... |
| St. Louis | Village of Chisholm | 12 | 427.55 | 10,680 | ..... |
| Itasca | Town of Nashwauk | 219 | 8,679.37 | 310,700 | ..... |
| Itasca | Town of Grand Rapids | 107 | 4,139.11 | 52,200 | ..... |
| Itasca | Town of Bass Brook | 52 | 1,816.85 | 25,650 | ..... |
| Itasca | Village of Nashwauk | 36 | 1,440.47 | 68,000 | ..... |
| Itasca | Town of Iron Range | 97 | 3,901.76 | 443,200 | ..... |
| Itasca | Town of Arbo, 56-25 | 21 | 851.25 | 27,400 | ..... |
| | Totals | 1,810 | 71,653.63 | $2,257,700 | ..... |

SUMMARY OF VALUATION OF IRON PROPERTIES--1907

| | No. | Acres | Class | Tonnage | Valuation | Pers |
|---|---|---|---|---|---|---|
| Mines | 2 | 200 | 1 | 43,185,685 | $14,251,276 | $2 |
| Mines | 4 | 800 | 1B | 66,442,923 | 19,932,876 | 3 |
| Mines | 4 | 1,280 | 2 | 25,176,067 | 6,797,538 | 2 |
| Mines | 27 | 3,329 | 3 | 138,845,839 | 32,134,497 | 2,0 |
| Mines | 28 | 2,940 | 4 | 91,494,762 | 17,653,975 | 5 |
| Mines | 28 | 1,955 | 5 | 105,821,134 | 14,561,749 | 5 |
| Tonnage prospects | 25 | 3,565 | 1 | 271,863,523 | 40,779,516 | 2 |
| Tonnage prospects | 41 | 3,950 | 2 | 204,635,249 | 20,483,518 | |
| Tonnage prospects | 99 | 9,640 | 3 | 244,504,575 | 19,490,345 | |
| Acreage prospects | 44 | 2,675 | | ..... | 998,000 | .... |
| Unclassed prospects | 4 | 953 | | 540,000 | 118,712 | |
| Mesabi Range iron lands | 1,810 | 71,654 | | ..... | 2,257,700 | .... |
| Totals | 2,116 | 102,941 | | 1,192,509,757 | $189,459,702 | $4,3 |

ADDITIONAL VALUATION

| | | |
|---|---|---|
| *Brunt Mine | | $ |
| *Hobart Mine | | |
| *Nassau Mine | | |
| *Helmer Mine | | |
| Total valuation | | $190, |
| Assessor's 1907 personalty valuation: | | |
| St. Louis County | $3,977,304 | |
| Itasca County | 355,376 | |
| Lake County | 1,810 | |
| | | 4, |
| Grand total valuation | | $194, |

| Assessment District | Tonnage Valuation 1907 | Acreage Prospects Valuation 1907 | Iron Lands Valuation 1907 | Total Valuation 1907 | Mine Valuation 1906 | Acreage Valuation 1906 | Total Valuation 1906 |
|---|---|---|---|---|---|---|---|
| St. Louis County: | | | | | | | |
| Town of Mesaba, 59-14 | $596,416 | ..... | $124,290 | $720,706 | $311,416 | $74,289 | $385,705 |
| Village of Mesaba | 18,915 | ..... | 6,800 | 25,715 | 621 | 4,933 | 5,554 |
| Town of White, 58 and 59-15 | 7,012,836 | ..... | 146,160 | 7,158,996 | 763,271 | 101,679 | 884,950 |
| Unorganized Town, 59-17 | 73,936 | ..... | 114,900 | 188,836 | ..... | 22,993 | 22,993 |
| Village of Aurora | 1,447,750 | $40,000 | 15,500 | 1,503,250 | 743,341 | 12,185 | 755,526 |
| Town of Biwabik, 58-16 | 2,476,013 | ..... | 23,540 | 2,499,553 | 1,515,123 | 9,353 | 1,524,476 |
| Village of McKinley | 72,550 | ..... | 2,700 | 75,250 | 8,479 | 165 | 8,644 |
| Village of Biwabik | 1,062,000 | ..... | 1,400 | 1,063,400 | 1,802,941 | 958 | 1,803,899 |
| Town of Fayal, 57-17 | 4,231,667 | ..... | 16,760 | 4,248,427 | 3,082,349 | 11,767 | 3,094,116 |
| Town of Clinton, 58-15 and 16 | 9,313 | ..... | ..... | 9,313 | ..... | ..... | ..... |
| Town of Missabe Mountain, 58-17 | 23,169,487 | ..... | 82,560 | 23,252,047 | 8,768,801 | 49,704 | 8,818,505 |
| Town of Nichols, 58-18 and S½ 59-18 | 9,991,026 | 20,000 | 96,180 | 10,107,206 | 6,795,792 | 80,479 | 6,876,271 |
| City of Eveleth | 1,629,473 | ..... | ..... | 1,629,473 | 218,480 | ..... | 218,480 |
| City of Virginia | 7,281,415 | ..... | 54,720 | 7,336,135 | 522,648 | 42,896 | 575,544 |
| Unorganized Town, 58½-17 | ..... | ..... | 29,900 | 29,900 | ..... | ..... | ..... |
| Village of Mountain Iron | 15,834 | ..... | ..... | 15,834 | 129,606 | ..... | 129,606 |
| Village of Hibbing | 43,341,853 | ..... | 209,000 | 43,550,853 | 7,919,786 | 169,878 | 8,089,664 |
| Town of Stuntz, 57 and 58-20 and 21 | 46,579,728 | 856,000 | 337,480 | 47,773,208 | 16,587,126 | 220,890 | 16,808,016 |
| Village of Buhl | 3,961,080 | ..... | 22,240 | 3,983,320 | 865,897 | 11,883 | 877,780 |
| Town of Great Scott, 58-19 | 5,259,802 | ..... | 35,740 | 5,295,542 | 988,187 | 34,111 | 1,022,298 |
| Village of Chisholm | 13,645,505 | ..... | 10,680 | 13,656,185 | 3,864,515 | 6,683 | 3,871,198 |
| Town of Breitung, 64-14 and 15 | 159,688 | ..... | ..... | 159,688 | 349,898 | ..... | 349,898 |
| Town of Morse, 62 and 63-12 and 13 | 278,704 | ..... | ..... | 278,704 | 654,480 | ..... | 654,480 |
| City of Ely | 1,852,305 | ..... | ..... | 1,852,305 | 2,999,993 | ..... | 2,999,993 |
| Lake County: | | | | | | | |
| Unorganized Town, 63-11 | 87,500 | ..... | ..... | 87,500 | ..... | ..... | ..... |
| Itasca County: | | | | | | | |
| Town of Nashwauk, 56-22 and 23 | 6,196,424 | 2,000 | 310,700 | 6,509,124 | 1,604,773 | 161,301 | 1,766,074 |
| Town of Grand Rapids, 55-25 | 220,964 | 80,000 | 52,200 | 353,164 | ..... | 143,078 | 143,078 |
| Town of Bass Brook, 55-26 | 67,601 | ..... | 25,650 | 93,251 | 2,835 | 16,546 | 19,381 |
| Village of Nashwauk | 1,880,032 | ..... | 68,000 | 1,948,032 | 1,217,334 | 26,348 | 1,243,682 |
| Town of Iron Range, 55-24 | 3,491,709 | ..... | 443,200 | 3,934,909 | 1,119,973 | 264,220 | 1,324,193 |
| Town of Arbo, 56-25 | 61,264 | ..... | 27,400 | 88,664 | 186,667 | 25,738 | 212,405 |
| Crow Wing County: | | | | | | | |
| Town of Nokay Lake, 45-29 | 24,812 | ..... | ..... | 24,812 | ..... | ..... | ..... |
| Town of Klondike, 46-29 | 6,400 | ..... | ..... | 6,400 | ..... | ..... | ..... |
| Totals | $186,204,002 | $998,000 | $2,257,700 | $189,459,702 | $63,024,332 | $1,492,077 | $64,486,409 |

SUMMARY 1907

| | |
|---|---|
| St. Louis County | $176,413,846 |
| Lake County | 87,500 |
| Itasca County | 12,927,144 |
| Crow Wing County | 31,212 |
| Total | $189,459,702 |

## Chapter IX.

### The Taxation of Iron Ore Lands (Continued).

The total valuation of iron properties in Minnesota for 1907, exclusive of the personal property belonging to operating companies, was $190,094,438, including the value of iron lands amounting to $2,257,700. The assessment for 1908 as shown in the tables below, not including iron lands, was fixed at $176,340,749, or $11,495,989 less than it was the year before. This difference is to be accounted for (see table) by changes in classification, shipments from the mines, and the alteration of tonnage estimates that had been made arbitrarily by the commission, after careful examination of blue prints and other information concerning the properties. The tables referred to above will explain in detail the changes made in the assessed value.

The amount of work required to list the 2,116 different mines and prospects and the miscellaneous acreage properties, accurately locate them on maps, and keep them clear of confusion with other properties, was very great. An efficient office force under Mr. Hurd, the secretary of the commission, was able by working night and day to prepare the lists for the final action of the state board of equalization. The commission in the course of three months visited the ranges, saw many properties, secured data from the mining companies, tabulated and classified it, worked out a scheme of classification and rates of taxation. Some mistakes were made and new properties omitted in several instances from the rolls, but for the time given to the work the commission accomplished a difficult and arduous task. The attitude of the min-

| | |
|---|---|
| Klondike Town..... | ..... |
| Nokay Lake..... | ..... |
| Total..... | ..... |
| LAKE COUNTY-- | |
| Unorganized 63-11..... | ..... |
| Grand Total..... | 35,245,360 |

| TOWN, VILLAGE or CITY | Class 1 Rate 33c | Class 1 B Rate 30c | Class 2 Rate 27c | Class 3 Rate 23c | Class 4 Rate 19c | Class 1 P Rate 15c | Class 5 Rate 14c | Class 2 P Rate 10c | Class 3 P Rate 8c | Arbitrary Not Classified |
|---|---|---|---|---|---|---|---|---|---|---|
| ST. LOUIS COUNTY-- | | | | | | | | | | |
| Aurora Village | ..... | ..... | ..... | 2,127,133 | 2,641,589 | ..... | ..... | ..... | ..... | ..... |
| Biwabik Town | ..... | 1,390,631 | ..... | 2,117,044 | ..... | 1,011,620 | 4,093,572 | 3,920,514 | ..... | ..... |
| Biwabik Village | ..... | 2,149,198 | ..... | ..... | ..... | 750,000 | ..... | 2,500,000 | ..... | ..... |
| Breitung Town | ..... | ..... | ..... | 594,768 | ..... | ..... | ..... | ..... | ..... | ..... |
| Buhl Village | ..... | ..... | ..... | 6,000,000 | ..... | 4,446,194 | 14,927,005 | 2,522,509 | ..... | ..... |
| Chisholm Village | ..... | ..... | ..... | 18,075,534 | 2,829,124 | ..... | 21,659,831 | 27,699,406 | 8,183,868 | ..... |
| Clinton Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Ely City | ..... | ..... | ..... | 6,572,647 | ..... | ..... | ..... | ..... | ..... | ..... |
| Eveleth City | ..... | ..... | ..... | 4,352,800 | ..... | ..... | ..... | ..... | ..... | ..... |
| Fayal Town | ..... | ..... | 13,436,194 | ..... | 317,686 | ..... | ..... | 186,261 | ..... | ..... |
| Gilbert Village | ..... | ..... | ..... | ..... | ..... | 193,413 | 2,562,057 | ..... | 6,500,000 | ..... |
| Great Scott Town | ..... | ..... | ..... | ..... | 2,027,000 | ..... | 4,854,011 | 19,922,018 | 19,473,719 | ..... |
| Hibbing Village | ..... | 33,626,182 | ..... | 15,609,405 | 2,006,011 | 110,096,097 | 13,063,853 | 70,044,350 | 4,586,306 | ..... |
| McKinley Village | ..... | ..... | ..... | ..... | ..... | ..... | 178,088 | ..... | ..... | ..... |
| Mesaba Town | ..... | ..... | ..... | ..... | ..... | 230,743 | 899,810 | 1,441,336 | 3,075,825 | ..... |
| Mesaba Village | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 472,882 | ..... |
| Missabe Mt. Town | ..... | ..... | 18,085,123 | 32,542,185 | 3,497,349 | 41,458,092 | 2,488,986 | 5,781,410 | 1,885,840 | ..... |
| Moree Town | ..... | ..... | ..... | 1,216,787 | ..... | ..... | ..... | ..... | ..... | ..... |
| Nichols Town | ..... | 22,284,307 | ..... | ..... | 8,982,496 | 4,924,382 | 1,275,914 | 2,070,072 | 3,017,819 | ..... |
| Stuntz Town | 35,245,360 | ..... | 1,316,014 | 9,965,664 | 26,037,467 | 41,083,791 | 14,796,513 | 73,705,001 | 101,277,717 | ..... |
| Unorganized, 58½-17 | ..... | ..... | ..... | ..... | ..... | 2,608,134 | ..... | ..... | ..... | ..... |
| Unorganized, 59-17 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 924,206 | ..... |
| Virginia City | ..... | ..... | ..... | ..... | 2,528,968 | 25,475,003 | ..... | 33,413,000 | 11,828,094 | ..... |
| White Town | ..... | ..... | ..... | ..... | ..... | 29,966,436 | ..... | 254,867 | 21,340,406 | ..... |
| Total | 35,245,360 | 59,450,318 | 32,837,331 | 99,173,967 | 50,867,690 | 262,243,905 | 80,799,640 | 243,460,744 | 182,566,682 | ..... |
| ITASCA COUNTY-- | | | | | | | | | | |
| Arbo Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 765,806 | ..... |
| Bass Brook Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 845,030 | ..... |
| Grand Rapids Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,762,073 | ..... |
| Iron Range Town | ..... | ..... | ..... | ..... | ..... | 10,564,697 | ..... | ..... | 36,757,907 | ..... |
| Keewatin Village | ..... | ..... | ..... | ..... | 2,840,472 | ..... | ..... | ..... | 25,060,538 | ..... |
| Nashwauk Town | ..... | ..... | ..... | ..... | ..... | 7,172,100 | 25,000 | 300,000 | 49,616,694 | ..... |
| Nashwauk Village | ..... | ..... | ..... | ..... | ..... | ..... | 9,695,106 | ..... | 137,899 | ..... |
| Total | ..... | ..... | ..... | ..... | 2,840,472 | 17,736,797 | 9,720,106 | 300,000 | 115,951,799 | ..... |
| CROW WING COUNTY-- | | | | | | | | | | |
| Klondike Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Nokay Lake | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 540,000 |
| Total | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 540,000 |
| LAKE COUNTY-- | | | | | | | | | | |
| Unorganized 63-11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Grand Total | 35,245,360 | 59,450,318 | 32,837,331 | 99,173,967 | 53,708,162 | 279,980,702 | 90,519,746 | 243,760,744 | 298,512,629 | 540,000 |

| TOWN, VILLAGE or CITY | Class 1 Rate 33c | Class 1 B Rate 30c | Class 2 Rate 27c | Class 3 Rate 23c | Class 4 Rate 19c | Class 1 P Rate 15c | Class 5 Rate 14c | Class 2 P Rate 10c | Class 3 P Rate 8c | Not Classified |
|---|---|---|---|---|---|---|---|---|---|---|
| ST. LOUIS COUNTY-- | | | | | | | | | | |
| Aurora Village | ..... | ..... | ..... | $489,240 | $501,903 | ..... | ..... | ..... | ..... | $510,000 |
| Biwabik Town | ..... | $417,169 | ..... | 486,919 | ..... | $151,743 | $573,100 | $392,051 | ..... | 25,000 |
| Biwabik Village | ..... | 644,759 | ..... | ..... | ..... | 112,500 | ..... | 250,000 | ..... | ..... |
| Breitung Town | ..... | ..... | ..... | 136,797 | ..... | ..... | ..... | ..... | ..... | ..... |
| Buhl Village | ..... | ..... | ..... | 1,380,000 | ..... | 666,929 | 2,089,780 | 252,251 | ..... | 20,000 |
| Chisholm Village | ..... | ..... | ..... | 4,157,373 | 537,533 | ..... | 3,032,376 | 3,769,940 | $654,709 | 200,000 |
| Clinton Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5,000 |
| Ely City | ..... | ..... | ..... | 1,511,709 | ..... | ..... | ..... | ..... | ..... | 1,000 |
| Eveleth City | ..... | ..... | ..... | 1,001,144 | ..... | ..... | ..... | ..... | ..... | ..... |
| Fayal Town | ..... | ..... | $3,627,772 | ..... | 30.360 | ..... | ..... | 18,626 | ..... | ..... |
| Gilbert Village | ..... | ..... | ..... | ..... | ..... | 29,012 | 358,688 | ..... | 520,000 | ..... |
| Great Scott Town | ..... | ..... | ..... | ..... | 385,130 | ..... | 679,561 | 1,992,201 | 1,557,896 | 337,600 |
| Hibbing Village | ..... | 10,087,855 | ..... | 3,590,163 | 381,143 | 16,514,414 | 1,828,939 | 7,004,434 | 366,904 | 50,000 |
| McKinley Village | ..... | ..... | ..... | ..... | ..... | ..... | 24,932 | ..... | ..... | 2,000 |
| Mesaba Town | ..... | ..... | ..... | ..... | ..... | 34,611 | 125,973 | 144,134 | 246,067 | 1,000 |
| Mesaba Village | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 37,830 | ..... |
| Missabe Mt. Town | ..... | ..... | 4,882,983 | 7,484,703 | 664,496 | 6,218,714 | 348,459 | 578,139 | 150,867 | ..... |
| Morse Town | ..... | ..... | ..... | 279,861 | ..... | ..... | ..... | ..... | ..... | ..... |
| Nichols Town | ..... | 6,685,292 | ..... | ..... | 1,706,674 | 738,657 | 178,628 | 207,007 | 241,425 | 20,000 |
| Stuntz Town | 11,630,969 | ..... | 355,324 | 2,292,102 | 4,947,119 | 6,162,568 | 2,071,516 | 7,370,497 | 8,102,217 | 752,500 |
| Unorganized 58½-17 | ..... | ..... | ..... | ..... | ..... | 391,218 | ..... | ..... | ..... | 18,800 |
| Unorganized 59-17 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 73,936 | ..... |
| Virginia City | ..... | ..... | ..... | ..... | 480,504 | 3,821,250 | ..... | 3,341,300 | 946,247 | ..... |
| White Town | ..... | ..... | ..... | ..... | ..... | 4,494,964 | ..... | 25,487 | 1,707,231 | 50,100 |
| Total | 11,630,969 | 17,835,095 | 8,866,079 | 22,810,011 | 9,664,862 | 39,336,580 | 11,311,952 | $24,346,067 | $14,605,329 | $1,993,000 |
| ITASCA COUNTY-- | | | | | | | | | | |
| Arbo Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 61,264 | ..... |
| Bass Brook Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 67,601 | ..... |
| Grand Rapids Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 220,964 | 7,500 |
| Iron Range Town | ..... | ..... | ..... | ..... | ..... | 1,584,705 | ..... | ..... | 2,940,630 | ..... |
| Keewatin Village | ..... | ..... | ..... | ..... | 539,690 | ..... | ..... | ..... | 2,004,840 | ..... |
| Nashwauk Town | ..... | ..... | ..... | ..... | ..... | 1,075,815 | 3,500 | 30,000 | 3,969,333 | 4,000 |
| Nashwauk Village | ..... | ..... | ..... | ..... | ..... | ..... | 1,357,314 | ..... | 11,032 | ..... |
| Total | ..... | ..... | ..... | ..... | $539,690 | $2,660,520 | $1,360,814 | $30,000 | $9,275,864 | $11,500 |
| CROW WING COUNTY-- | | | | | | | | | | |
| Klondike Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 6,400 |
| Nokay Lake Town | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 24,812 |
| Total | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | $31,212 |
| LAKE COUNTY-- | | | | | | | | | | |
| Unorganized 63-11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 31,405 |
| Total | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | $31,405 |
| Grand Total | 11,630,969 | 17,835,095 | 8,866,079 | 22,810,011 | 10,204,552 | 41,997,100 | 12,672,766 | $24,376,067 | $23,880,793 | $2,067,117 |

Net increase and decrease in classification, new tonnages, increased tonnages, decreased tonnages, 1907 shipment and 1908 stock pile tonnage and value of mines and mining properties by assessment districts in St. Louis, Itasca and

| MINE | Net Increase | | Net Decrease | | Arbitrary Value of Mine Prospects | | Assessment Districts--Net Increase | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tonnage | Value | Tonnage | Value | Net Increase | Net Decrease | Tonnage | Value | Tonn |
| St. Louis Co. | | | | | | | | | |
| AURORA VILLAGE-- | | | | | | | | | |
| Fowler Mine | 335,000 | $63,650 | ..... | ..... | ..... | ..... | ..... | ..... | |
| Meadow Mine | 259,040 | 49,218 | ..... | ..... | ..... | ..... | ..... | ..... | |
| Miller Mine | ..... | ..... | 372,867 | $85,760 | ..... | ..... | ..... | ..... | |
| Mohawk Mine | ..... | ..... | 177,451 | 33,715 | ..... | ..... | ..... | ..... | |
| Total | 594,040 | $112,868 | 550,318 | $119,475 | $20,000 | ..... | 43,722 | $13,393 | |
| BIWABIK TOWN-- | | | | | | | | | |
| Hector Mine | ..... | ..... | 72,000 | $10,080 | ..... | ..... | ..... | ..... | |
| Ajax Mine | ..... | ..... | 2,000 | ..... | ..... | ..... | ..... | ..... | |
| Williams Mine | 99,300 | $22,839 | ..... | ..... | ..... | ..... | ..... | ..... | |
| Cass Mine | ..... | ..... | 36,121 | 8,308 | ..... | ..... | ..... | ..... | |
| Biwabik Mine | ..... | ..... | 203,000 | 60,900 | ..... | ..... | ..... | ..... | |
| Cincinnati Mine | ..... | 18,089 | 6,369 | ..... | ..... | ..... | ..... | ..... | |
| Duluth Mine | ..... | ..... | 92,120 | 12,897 | ..... | ..... | ..... | ..... | |
| Holland Mine | ..... | ..... | 18,000 | 2,520 | ..... | ..... | ..... | ..... | |
| McKinley Mine | 436,195 | 223,738 | ..... | ..... | ..... | ..... | ..... | ..... | |
| Kellogg Mine | ..... | ..... | 4,987 | 698 | ..... | ..... | ..... | ..... | |
| Corsica Mine | ..... | ..... | 235,971 | 113,857 | ..... | ..... | ..... | ..... | |
| Total | 535,495 | $264,666 | 670,568 | $209,260 | ..... | $10,000 | ..... | $45,406 | |
| BIWABIK VILLAGE-- | | | | | | | | | |
| Biwabik Mine | ..... | ..... | 600,802 | $292,740 | ..... | ..... | ..... | ..... | |
| Total | ..... | ..... | 600,802 | $292,740 | ..... | ..... | ..... | ..... | |
| BREITUNG TOWN-- | | | | | | | | | |
| Soudan Mine | ..... | ..... | 99,530 | $22,892 | ..... | ..... | ..... | ..... | |
| Total | ..... | ..... | 99,530 | $22,892 | ..... | ..... | ..... | ..... | |
| BUHL VILLAGE-- | | | | | | | | | |
| Wabigan Prospect | ..... | ..... | ..... | ..... | $20,000 | ..... | ..... | ..... | |
| Total | ..... | ..... | ..... | ..... | $20,000 | ..... | ..... | $20,000 | |
| CHISHOLM VILLAGE-- | | | | | | | | | |
| Shenango Mine | ..... | ..... | 226,720 | $136,076 | ..... | ..... | ..... | ..... | |
| Myers Mine | ..... | ..... | 148,095 | 340,154 | ..... | ..... | ..... | ..... | |
| Chisholm Mine | ..... | ..... | 240,006 | 55,179 | ..... | ..... | ..... | ..... | |
| Pearce Mine | ..... | ..... | 12,945 | 1,813 | ..... | ..... | ..... | ..... | |
| Clark Mine | ..... | ..... | 306,172 | 70,380 | ..... | ..... | ..... | ..... | |
| Leonard Mine | ..... | ..... | 137,360 | 180,102 | ..... | ..... | ..... | ..... | |
| Monroe-Tenner Mine | ..... | ..... | 346,805 | 727,920 | ..... | ..... | ..... | ..... | |
| Total | ..... | ..... | 1,418,103 | $1,511,604 | ..... | ..... | ..... | ..... | |

classification, new tonnages, increased tonnages, decreased tonnages, [illegible]

| MINE | Net Increase | | Net Decrease | | Arbitrary Value of Mine Prospects | | Assessment Districts--Net Balances | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Increase | | Decrease | |
| | Tonnage | Value | Tonnage | Value | Net Increase | Net Decrease | Tonnage | Value | Tonnage | V |
| St. Louis Co. | | | | | | | | | | |
| CLINTON TOWN-- | ..... | ..... | ..... | ..... | $5,000 | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | ..... | ..... | $5,000 | ..... | ..... | $5,000 | ..... | ... |
| ELY CITY-- | | | | | | | | | | |
| Pioneer Mine | ..... | ..... | 807,206 | $185,658 | ..... | ..... | ..... | ..... | ..... | ... |
| Zenith Mine | ..... | ..... | 211,463 | 48,636 | ..... | ..... | ..... | ..... | ..... | ... |
| Chandler Mine | ..... | ..... | 159,248 | 36,627 | ..... | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | 1,177,917 | $270,921 | $1,000 | ..... | ..... | ..... | 1,177,917 | $ |
| EVELETH CITY-- | | | | | | | | | | |
| Spruce-Cloquet Mine | ..... | ..... | 58,934 | $13,555 | ..... | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | 58,934 | $13,555 | ..... | ..... | ..... | ..... | 58,934 | |
| FAYAL TOWN-- | | | | | | | | | | |
| Fayal Mine | ..... | ..... | 1,877,393 | $506,897 | ..... | ..... | ..... | ..... | ..... | ... |
| Troy Mine | ..... | ..... | 143,814 | 27,325 | ..... | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | 2,021,207 | $534,222 | ..... | ..... | ..... | ..... | 2,021,207 | $ |
| GILBERT VILLAGE-- | | | | | | | | | | |
| La Belle Mine | ..... | ..... | 84,100 | $11,775 | ..... | ..... | ..... | ..... | ..... | ... |
| Mariska Mine | ..... | ..... | 6,587 | 988 | ..... | ..... | ..... | ..... | ..... | ... |
| Pettit Mine | ..... | ..... | 61,327 | 8,585 | ..... | ..... | ..... | ..... | ..... | ... |
| Schley Prospect | ..... | ..... | ..... | 455,000 | ..... | ..... | ..... | ..... | ..... | ... |
| Hobart Mine | ..... | ..... | 9,833 | 1,376 | ..... | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | 161,847 | $477,724 | ..... | ..... | ..... | ..... | 161,847 | $ |
| GREAT SCOTT TOWN-- | | | | | | | | | | |
| Woodbridge Prospect | 61,579 | $4,924 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Jennings Mine | 2,000 | 380 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Oliver Prospect | 590,197 | 47,216 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Kinney Mine | ..... | ..... | 145,989 | $315,438 | ..... | ..... | ..... | ..... | ..... | ... |
| Wanless Prospect | 940,526 | 75,242 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| La Belle Prospect | 9,000 | 721 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Whiteside Prospect | 1,000 | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Helmer Prospect | ..... | 20,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Total | 1,604,302 | $148,583 | 145,989 | $315,438 | $217,350 | ..... | 1,458,313 | $50,495 | ..... | ... |
| HIBBING VILLAGE-- | | | | | | | | | | |
| Webb Mine | ..... | ..... | 132,213 | $632,620 | ..... | ..... | ..... | ..... | ..... | ... |
| Sellers Mine | ..... | ..... | 158,015 | 36,344 | ..... | ..... | ..... | ..... | ..... | ... |
| Susquehanna Mine | ..... | ..... | 6,424,006 | 1,159,847 | ..... | ..... | ..... | ..... | ..... | ... |
| Winnifred Mine | ..... | ..... | 71,098 | 13,508 | ..... | ..... | ..... | ..... | ..... | ... |
| Morris Mine | ..... | ..... | 2,064,281 | 619,284 | ..... | ..... | ..... | ..... | ..... | ... |
| Laura Mine | ..... | ..... | 188,538 | 35,822 | ..... | ..... | ..... | ..... | ..... | ... |
| Day Mine | ..... | ..... | 1,222,901 | 1,154,970 | ..... | ..... | ..... | ..... | ..... | ... |
| Burt Mine | ..... | ..... | 1,290,720 | 387,316 | ..... | ..... | ..... | ..... | ..... | ... |

classification, new tonnages, increased tonnages, decreased tonnages, 1907 shipment and 1908 stock pile

| MINE | Net Increase | | Net Decrease | | Arbitrary Value of Mine Prospects | | Assessment Districts--Net Balances | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Increase | | Decrease | |
| | Tonnage | Value | Tonnage | Value | Net Increase | Net Decrease | Tonnage | Value | Tonnage | V |
| St. Louis Co. | | | | | | | | | | |
| McKINLEY VILLAGE-- | | | | | | | | | | |
| Wills Mine | ..... | ..... | 6,912 | $968 | $2,000 | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | 6,912 | $968 | $2,000 | ..... | ..... | $1,032 | 6,912 | ... |
| MESABA TOWN-- | | | | | | | | | | |
| Spring Mine | ..... | ..... | 19,257 | $2,889 | ..... | ..... | ..... | ..... | ..... | ... |
| Adriatic Mine | ..... | ..... | 100,190 | 14,027 | ..... | ..... | ..... | ..... | ..... | ... |
| Mayas Mine | ..... | ..... | 70,000 | 9,800 | ..... | ..... | ..... | ..... | ..... | ... |
| Total | ..... | ..... | 189,447 | $26,716 | $1,000 | ..... | ..... | ..... | 189,447 | ... |
| MISSABE MOUNTAIN TOWN-- | | | | | | | | | | |
| Larkin Mine | ..... | ..... | 32,677 | $4,575 | ..... | ..... | ..... | ..... | ..... | ... |
| Minorca Mine | ..... | ..... | 181,309 | 41,701 | ..... | ..... | ..... | ..... | ..... | ... |
| Higgins Mine | ..... | ..... | 53,328 | 12,265 | ..... | ..... | ..... | ..... | ..... | ... |
| McEwen Mine | ..... | ..... | 115,272 | 45,232 | ..... | ..... | ..... | ..... | ..... | ... |
| Onondaga Mine | ..... | ..... | 7,918 | 1,188 | ..... | ..... | ..... | ..... | ..... | ... |
| Lincoln Mine | ..... | ..... | 377,869 | 86,910 | ..... | ..... | ..... | ..... | ..... | ... |
| Missabe Mountain Mine | ..... | $1,183,494 | 111,254 | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Lone Jack Mine | ..... | ..... | 98,807 | 26,678 | ..... | ..... | ..... | ..... | ..... | ... |
| Bessemer Mine | ..... | ..... | 111,033 | 90,158 | ..... | ..... | ..... | ..... | ..... | ... |
| Union Mine | ..... | 71,454 | 89,619 | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Commodore Mine | ..... | ..... | 477,203 | 109,757 | ..... | ..... | ..... | ..... | ..... | ... |
| Franklin Mine | ..... | ..... | 37,188 | 8,553 | ..... | ..... | ..... | ..... | ..... | ... |
| Norman Mine | ..... | ..... | 3,498 | 525 | ..... | ..... | ..... | ..... | ..... | ... |
| Ohio Mine | ..... | ..... | 801,410 | 216,381 | ..... | ..... | ..... | ..... | ..... | ... |
| Yawkey Mine | ..... | ..... | 43,600 | 6,104 | ..... | ..... | ..... | ..... | ..... | ... |
| Victoria Mine | ..... | ..... | 110,860 | 21,063 | ..... | ..... | ..... | ..... | ..... | ... |
| Elba Mine | ..... | ..... | 200,622 | 105,729 | ..... | ..... | ..... | ..... | ..... | ... |
| Gilbert Mine | ..... | 174,523 | 100,257 | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Chicago Prospect | 443,868 | 44,387 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ... |
| Genoa Mine | ..... | ..... | 46,225 | 8,783 | ..... | ..... | ..... | ..... | ..... | ... |
| Malta Mine | ..... | ..... | 30,518 | 4,272 | ..... | ..... | ..... | ..... | ..... | ... |
| Adams Dorr 80 | ..... | ..... | 69,515 | 15,988 | ..... | ..... | ..... | ..... | ..... | ... |
| Adams Mine | ..... | ..... | 954,438 | 219,521 | ..... | ..... | ..... | ..... | ..... | ... |
| Adams-Cloquet Mine | ..... | ..... | 5,754,379 | 1,323,507 | ..... | ..... | ..... | ..... | ..... | ... |
| Adams Park Lot | ..... | ..... | 5,832 | 467 | ..... | ..... | ..... | ..... | ..... | ... |
| Total | 443,862 | $1,478,858 | 9,814,631 | $2,349,357 | ..... | ..... | ..... | ..... | 9,370,769 | $8 |

| MINE | Net Increase | | Net Decrease | | Arbitrary Value of Mine Prospects | | Assessment Districts--Net Balance: Increase | | Decrease | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Tonnage | Value | Tonnage | Value | Net Increase | Net Decrease | Tonnage | Value | Tonnage | |
| St. Louis Co. | | | | | | | | | | |
| MORSE TOWN-- | | | | | | | | | | |
| Sibley Mine | ..... | ..... | 356,810 | $82,066 | ..... | ..... | ..... | ..... | ..... | .. |
| Savoy Mine | 58,902 | $13,547 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Total | 58,902 | $13,547 | 356,810 | $82,066 | ..... | ..... | ..... | ..... | 297,908 | |
| NICHOLS TOWN-- | | | | | | | | | | |
| Mountain Iron Rathbun Mine | ..... | ..... | 1,531,446 | $459,434 | ..... | ..... | ..... | ..... | ..... | .. |
| Mountain Iron Aetna Mine | ..... | ..... | 441,819 | 132,545 | ..... | ..... | ..... | ..... | ..... | .. |
| Wacouta Mine | ..... | ..... | 157,881 | 52,497 | ..... | ..... | ..... | ..... | ..... | .. |
| Brunt Mine | ..... | ..... | 190,132 | 36,126 | *$100,000 | ..... | ..... | ..... | ..... | .. |
| Iroquois Mine | 1,025,914 | $131,128 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Total | 1,025,914 | $131,128 | 2,321,278 | $680,602 | $100,000 | ..... | ..... | ..... | 1,295,364 | |
| STUNTZ TOWN-- | | | | | | | | | | |
| Nassau Mine | ..... | ..... | 31,373 | $4,393 | ..... | ..... | ..... | ..... | ..... | .. |
| Longyear Mine | 3,000,000 | $570,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Croxton Mine | ..... | ..... | 352,369 | 49,332 | ..... | ..... | ..... | ..... | ..... | .. |
| Hartley Mine | ..... | 470,879 | 334,646 | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Shenango Mine (Pt. of) | ..... | ..... | 222,725 | 832,178 | ..... | ..... | ..... | ..... | ..... | .. |
| Oliver Prospect, 25-58-20 | 543,950 | 43,516 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Niles Mine | ..... | ..... | 1,992,576 | 159,406 | ..... | ..... | ..... | ..... | ..... | .. |
| Pettit Prospect | ..... | ..... | 1,280,536 | 102,443 | ..... | ..... | ..... | ..... | ..... | .. |
| Pillsbury Mine | ..... | ..... | 489,728 | 393,935 | ..... | ..... | ..... | ..... | ..... | .. |
| Glen Mine | 444,610 | ..... | ..... | 643,444 | ..... | ..... | ..... | ..... | ..... | .. |
| Morrow Mine | ..... | ..... | 35,898 | 5,026 | ..... | ..... | ..... | ..... | ..... | .. |
| Albany Mine | ..... | ..... | 448,233 | 348,124 | ..... | ..... | ..... | ..... | ..... | .. |
| Mahoning Mine | ..... | ..... | 5,563,064 | 1,835,811 | ..... | ..... | ..... | ..... | ..... | .. |
| Mahoning Prospect | 7,000,000 | 1,050,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Hull Mine | ..... | ..... | 3,032,208 | 895,462 | ..... | ..... | ..... | ..... | ..... | .. |
| N. W. I. Prospect No. 2 | 92,196 | 9,220 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Utica Mine | 938,753 | 178,363 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Cyprus Mine | ..... | ..... | 260,947 | 49,580 | ..... | ..... | ..... | ..... | ..... | .. |
| Stevenson Mine | ..... | ..... | 1,183,986 | 319,676 | ..... | ..... | ..... | ..... | ..... | .. |
| Leetonia Mine | 1,080,156 | 205,230 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Carson Lake Prospect | 113,196 | 9,056 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Agnew Mine | ..... | ..... | 149,262 | 28,360 | ..... | ..... | ..... | ..... | ..... | .. |
| Scranton Mine | 619,000 | ..... | ..... | 292,620 | ..... | ..... | ..... | ..... | ..... | .. |
| D'Autremont Mine | 74 | 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Chisholm Prospect | 20 | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Total | 13,831,955 | $2,536,277 | 15,377,551 | $5,959,788 | ..... | $179,989 | ..... | ..... | 1,545,596 | $3, |
| UNORGANIZED 58½-17-- | | | | | | | | | | |
| Silver No. 8 | 2,383,322 | $357,498 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Silver No. 9 | 224,812 | 33,720 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Total | 2,608,134 | $391,218 | ..... | ..... | $18,800 | ..... | 2,608,134 | $410,018 | ..... | .. |
| VIRGINIA CITY-- | | | | | | | | | | |
| Alberta Mine | ..... | ..... | 51,032 | $9,696 | ..... | ..... | ..... | ..... | ..... | .. |
| Great Western Prospect | 5,000 | $400 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Total | 5,000 | $400 | 51,032 | $9,696 | ..... | ..... | ..... | ..... | 46,032 | |
| WHITE TOWN-- | | | | | | | | | | |
| Oliver Prospect, 5-58-15 | 678,076 | $54,246 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .. |
| Stephens Mine | ..... | ..... | ..... | $1,103,468 | ..... | ..... | ..... | ..... | ..... | .. |
| **Total** | **678,076** | **$54,246** | ..... | $1,103,468 | ..... | $70,100 | ..... | ..... | ..... | .. |

Net increase and decrease in tonnage and value of mines and mining properties by assessment districts in St. Louis, Itasca and Lake Counties thru changes in classification, new tonnages, increased tonnages, decreased tonnages, 1907 shipment and 1908 stock pile

| MINE | Net Increase | | Net Decrease | | Arbitrary Value of Mine Prospects | | Assessment Districts--Net Balances | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Increase | | Decrease | |
| | Tonnage | Value | Tonnage | Value | Net Increase | Net Decrease | Tonnage | Value | Tonnage | Val |
| Itasca Co. | | | | | | | | | | |
| IRON RANGE TOWN-- | | | | | | | | | | |
| Diamond Mine | ..... | ..... | 171 | $13 | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 21-56-24 | 1,452,616 | $116,209 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 21-56-24 | 3,717,537 | 297,403 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Holman Mine | ..... | ..... | 13,920 | 1,113 | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 21-56-24 | 341,621 | 27,330 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bovey No. 1 Prospect | 1,181,574 | 94,525 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 21-56-24 | 606,115 | 48,489 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 21-56-24 | 655,361 | 52,428 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Walker Hill No. 2 Prospect | 4,322,654 | 345,812 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Walker Hill No. 1 Prospect | ..... | ..... | 1,213,636 | 97,112 | ..... | ..... | ..... | ..... | ..... | ..... |
| Canesteo Mine | ..... | ..... | 15,867 | 2,379 | ..... | ..... | ..... | ..... | ..... | ..... |
| Walker Hill No. 3 Prospect | 1,900,565 | 152,045 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total | 14,178,043 | $1,134,241 | 1,243,594 | $100,617 | ..... | ..... | 12,934,449 | $1,033,624 | ..... | ..... |
| NASHWAUK TOWN-- | | | | | | | | | | |
| Alexander Mine | ..... | ..... | 175,000 | $12,499 | ..... | ..... | ..... | ..... | ..... | ..... |
| St. Paul | ..... | ..... | 159,528 | 30,310 | ..... | ..... | ..... | ..... | ..... | ..... |
| Sullivan No. 2 Prospect | 100,000 | $8,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sullivan No. 9 Prospect | 500,000 | 40,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 17 and 18-56-23 (Hill) | 86,641 | 6,931 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 17-56-23 | 11,497,333 | 919,787 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 17-56-23 | 1,188,709 | 95,097 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 17-56-23 | 1,830,126 | 146,410 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 18 and 19-56-23 | 695,458 | 55,637 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oliver Prospect, 18 and 19-56-23 | 2,471,261 | 197,701 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total | 18,369,528 | $1,469,563 | 334,528 | $42,809 | $2,000 | ..... | 18,035,000 | $1,428,754 | ..... | ..... |
| NASHWAUK VILLAGE-- | | | | | | | | | | |
| Crosby Mine | 25,038 | $3,505 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| La Rue Mine | ..... | ..... | 908,960 | $127,254 | ..... | ..... | ..... | ..... | ..... | ..... |
| Hawkins Mine | ..... | ..... | 270,972 | 387,936 | ..... | ..... | ..... | ..... | ..... | ..... |
| Total | 25,038 | $3,505 | 1,179,932 | $515,190 | ..... | ..... | ..... | ..... | 1,154,894 | $61 |
| Lake Co. | | | | | | | | | | |
| UNORGANIZED TOWN 63-11-- | ..... | ..... | ..... | ..... | ..... | **$56,095 | ..... | ..... | ..... | ..... |
| Total | ..... | ..... | ..... | ..... | ..... | $56,095 | ..... | ..... | ..... | $5 |
| Grand Total | 53,958,289 | $7,739,100 | 52,739,087 | $19,383,755 | $467,250 | $318,584 | 34,355,659 | $2,872,396 | 2,746,532 | $5,87 |

** Decrease in value of unclassified properties in Lake County.

SUMMARY BY COUNTIES.

| County | Net Increase Tonnage | Net Increase Value | Net Decrease Tonnage | Net Decrease Value |
|---|---|---|---|---|
| St. Louis | ..... | ..... | 28,595,353 | $13,318,087 |
| Itasca | 29,814,555 | $1,878,193 | ..... | ..... |
| Lake | ..... | ..... | ..... | 56,095 |
| Grand total... | 29,814,555 | $1,878,193 | 28,595,353 | $13,374,182 |
| | 28,595,353 | | | 1,878,193 |
| Balance ..... | 1,219,202 | | | $11,495,989 |

COMPARATIVE SUMMARY.

| | Total Tonnage | Total Value |
|---|---|---|
| 1907 Tonnage and Value..... | 1,192,509,757 | $190,094,438 |
| Mesabi Range Iron Lands not included in 1908 Summary..... | ..... | 2,257,700 |
| | 1,192,509,757 | $187,836,738 |
| Net Increase and Decrease, 1908. | 1,219,202 | 11,495,989 |
| 1908 Tonnage and value..... | 1,193,728,959 | $176,340,749 |

APPLICATIONS FOR ABATEMENTS.

During the year 1907-1908 many applications were made to the tax commission for reduction in the assessment standing against the properties of the iron mining companies. These applications aggregated $43,447,760 upon properties assessed for $106,896,319. Of this sum the commission rejected all the applications except twenty-three, aggregating $2,942,254, leaving the assessment against these properties at $103,949,065.

ABATEMENT OF THE ONE MILL SCHOOL TAX.

A peculiar situation arose in the different school districts in St. Louis county, due to the fact that the trustees of the districts did not take into consideration the effect the great increase in the amount of the assessment on the iron

properties would have on the one mill county school tax. The tax levy for school purposes was based on the 1907 assessment; the consequence was that the general tax of one mill for school purposes in 1908 produced an amount far in excess of the needs of the districts. The application for the abatement of the tax was made by the officers of the school districts affected and recommended by the county commissioners and the auditor of St. Louis county. Taxes amounting to $182,110 were therefore abated in the school districts. The districts were not deprived of needed revenue, since they had inadvertently levied a tax for more revenue than was needed. The result is shown in the accompanying table.

AMOUNT OF ABATEMENT OF ONE MILL TAX BY SCHOOL DISTRICTS.

| | Valuation | Tax Abated |
|---|---|---|
| School District No. 15 | $8,770,576 | $8,770.57 |
| School District No. 18 | 5,951,902 | 5,951.90 |
| School District No. 21 | 10,602,525 | 10,602.52 |
| School District No. 22 | 19,977,983 | 19,977.98 |
| School District No. 24 | 4,038,523 | 4,038.52 |
| School District No. 27 | 82,454,836 | 82,454.83 |
| School District No. 35 | 9,785,446 | 9,785.44 |
| School District No. 39 | 15,109,033 | 15,109.03 |
| School District No. 40 | 25,419,279 | 25,419.28 |
| Total | $182,110,103 | $182,110.07 |

THE ATTITUDE OF THE COMMISSION TOWARD BACK ASSESSMENTS.

From time to time the commission has been called upon, either by letter or interview, to state its attitude upon the matter of so-called back assessments. The occasion of the reassessment of the iron properties of the state raised the question in its most important form. The commission in reply to letters addressed to them by Hon. R. H. Jefferson took the occasion to set forth at some length its views regarding the matter of assessing the iron properties and the questions arising in connection with it.

FEBRUARY 29, 1908.

HON. R. H. JEFFERSON, BINGHAM LAKE, MINNESOTA.

DEAR SIR: Regretting your inability to come to St. Paul in the near future to talk over the points raised by you in your communications of February 16th and 22d, the commission takes this opportunity of answering your letters.

In making a revaluation of the iron properties, the commission acted upon its own initiative, though having in view your petition, the resolutions of the legislature, and the general conditions existing in the iron range country. The commission did not, and does not, consider it wise or expedient to make a reassessment of iron properties for back taxes over the period of ten years, from 1896 to 1906, as called upon to do in your petition.

As you are aware, the reassessment of property for back taxes over so long a period as that named in your petition would be resisted by an appeal to the court. In the opinion of the commission your petition was too vague and indefinite to stand as a basis of a legal fight. The commission therefore, in raising the valuation of iron properties of the state from $70,000,000 to $190,094,438, acted under subitem 5 of paragraph 12 of chapter 408, Laws of 1907, which reads as follows: "Prior to the sitting of the State Board of Equalization each year, and subject to review as herein stated, to raise or lower the assessed valuation of any or all real and personal property, or any portion thereof, within the state."

The further reasons which actuated this body in the attitude which it has taken in reference to the revaluation and levy of additional back taxes may be stated briefly as follows:

(a) Much of the iron land in this state during the last ten years has changed owners, which would render it impossible to impose the delinquent tax upon those who should pay it, if assessed. More than that, taxable real estate is rarely omitted from the tax rolls, and if undervalued it is because the taxing officers have failed to do their duty. It is not the fault of the land owner. The commission does not

deem it wise to reopen past assessments and punish land owners for the sins of assessors.

(b) Development of value has gone on gradually, and it cannot be assumed that the values of today were the values of twelve years ago. Moreover, information would not be obtainable now to make an equitable assessment for past years.

(c) From time to time for many years the valuation of iron ore lands has been considered and passed upon by the state board of equalization. The commission does not regard it as wise or desirable to reconsider the work of a legal body created and established for the distinct purpose of passing upon valuations established before the tax commission was organized.

(d) Tax evasion and undervaluation is not confined to the iron ranges. It is universal and has long been practised in all parts of the state. If the commission went back twelve years, as you request, and reassessed iron properties, in all fairness it should go back twelve years and reassess all other property that has been undervalued. The commission does not believe that such an undertaking would be wise if it were possible. Nor would it if undertaken meet with the approval of the fair-minded people of the state.

(e) The revaluation of property and the collection of delinquent taxes would place in the hands of the local governments on the iron ranges large sums, for which they have little or no use, without materially affecting the tax rates in other parts of the state.

(f) Such a policy as you suggest, when followed to its logical conclusion, would make the tax commission a body of tax ferrets engaged in prying into the past, and would inaugurate a revolution, sure to check better administration and reform in tax matters more than any benefits likely to be derived from such action would offset.

(g) The law under which you ask a reassessment does not provide with certainty how the expense of reassessment shall be met. Section 17 referred to in your petition provides that, "The expense of such reassessment shall be paid as provided by section 858 of said Revised Laws of 1905," but an examination of section 858 reveals the fact that it is silent on the subject. The reference intended was undoubtedly to

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856. The task of revaluing the iron properties of the state over a period of twelve years would be herculean and expensive; and to undertake it without any certain means of paying the expense would be unwarranted.

As you undoubtedly know, advancement in taxation is not merely a matter of collecting more money by the use of force, but it is a question of larger responsibility, more equitable laws, and better administration.

In order that there may be no misunderstanding regarding the attitude of the commission, it may be said that it is their settled policy as far as possible to close the assessment books of previous years and devote their energies to securing more equitable assessments, better administration, and more satisfactory laws in the field of taxation.

Inasmuch as the matters involved in this correspondence are of a public nature, you are at liberty to give this letter such publicity as you may think advisable.

Very truly yours,
(Signed) FRANK L. MCVEY,
SAMUEL LORD,
O. M. HALL,
Commissioners.

THE ASSESSMENT OF IRON ORE PROPERTIES.

In the opinion of the commission *ad valorem* taxation of the mining properties in the state has reached a reasonable degree of efficiency. Corrections in the list of properties will have to be made from time to time, but speaking generally a system has been inaugurated that meets the demands for assessment purposes fairly well. As it now stands the tax commission has not had the funds to check the returns made to it; in future years a skilled engineer should be employed to go over blue prints and estimate so the people of the state may know that the returns have been fairly made. The location of tonnage, the classification of mines and the establishment of rates of valuation were means by which the assessment was arrived at and the value of the property established. Adherence to these, however, is not fundamental, and existing classes and rates will be abandoned whenever

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it appears that inequality of assessment exists by reason of their use.

As the shipments of ore increase from year to year the assessment against the iron ore properties will decline until nothing is left to represent great properties but holes in the ground. In thirty years real estate now worth $400,000,000 will be valueless. This is an inevitable result. Comparisons have been made between farms and mines; the difference, which is great in many respects, is emphasized by the results of the operation of the two. The farm holds its productivity year after year; the mine loses little by little its power to create wealth. The tax in one instance might therefore greatly vary from that existent in the other. The farm remains for ever as a subject of taxation; the mine soon ceases to be a source of revenue for the state.

THE TONNAGE TAX.

From the point of view of ease of administration a tonnage tax on the output of mines commends itself highly to taxing officials. Moreover, it establishes automatically a rough system of justice that is much nearer equality than any system of assessment is likely to develop. The objections urged against it are two in number: first, the establishment of a tonnage tax opens the way to reprisal by increasing the rate from time to time until it becomes prohibitive; second, the imposition of a tonnage tax by the state would deprive the local governments of their revenue, since they are practically dependent upon the mines for their support. The answer to the first is brief and may be put somewhat dogmatically to this effect, that no legislature is going to pass a law making a rate which is unfair or prohibitive. The answer to the second objection is that no legislature would presume to take away from local governments their means of support. While these assertions appear to be without support so far as facts are concerned, yet past experience in tax matters would go to prove that not only is the rate likely to be somewhat less than the facts demand, but that the local governments will invariably be protected against any aggression on the part of the state.

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STATE AND LOCAL INTERESTS.

The interests of the state are distinctly different from those of the local governments. The state ought to secure some share of the wealth found in its borders, and which, being exploited, is bound sooner or later to be exhausted. The best method of doing this in the case of the iron properties is unquestionably through the medium of a tonnage tax. The local governments require steadiness and certainty of income and could not safely rely upon the uncertain output of mines for their revenue. A tonnage tax for local purposes is therefore undesirable. Both conditions can be met, however, by imposing a tonnage tax for state purposes and a direct tax for local purposes.

The failure of the tax amendment to pass and the doubt concerning the decision of the supreme court in the pending suit relative to the passage of the amendment in 1906 leave the question of a tonnage tax in a position of uncertainty. Section 17 of article 9 of the constitution undoubtedly authorizes a tonnage tax; but it does not recognize a double system of taxation such as the situation in the mining districts of the state demands. In case the amendment of 1906 is not upheld by the court, the whole question of a tonnage tax so far as the present legislature is concerned becomes academic. The legal phases of the question are fully and clearly set forth by Attorney General Young in the following opinion:

ST. PAUL, DECEMBER 21, 1908.

Hon. FRANK L. MCVEY, CHAIRMAN TAX COMMISSION.

DEAR SIR: In your favor of the 18th inst. you ask my opinion upon the following questions:

1. Would a law imposing a tonnage tax on the output of iron mines in lieu of all other taxes be constitutional?

2. Would a law imposing such a tax in addition to the general property tax be constitutional?

3. Would a law imposing such a tax for state purposes, only, in lieu of all other state taxes be constitutional? (The local communities to derive their revenues as at present by a general property tax.)

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I have the honor to advise you that a contest is now pending in our supreme court, involving the question of the adoption of the so-called "wide-open" tax amendment submitted to the people at the election of 1906. I feel justified, therefore, in answering your questions both on the theory that such amendment was adopted, and on the theory that it was not.

Assuming that the amendment was adopted, then sections one, two, three and four of Article IX of the Constitution have been abrogated. Taxes are required to be equal on the same class of subjects only. Iron mines are capable of differentiation from other real property and may for taxation be put in a class by themselves, and taxed differently from other property of the state. Upon that hypothesis your first and third questions should be answered in the affirmative.

The state could impose a tonnage tax on iron mines in lieu of all other taxes thereon; or it could separate the taxes to be imposed for state purposes on such properties from local taxes, and impose the state taxes on a tonnage basis, leaving the localities where the mines are located to raise their revenues by a direct *ad valorem* assessment on the properties, as at present.

Many valid arguments suggest themselves against a plan which would impose a tonnage tax on the mines for all purposes. Such a plan would devolve upon the state the duty of apportioning back to the taxing districts where the mines are situated such proportion of the tonnage tax collected as would equal the direct tax which the mineral properties ought equitably to pay toward the support of local school and municipal government. As the tonnage tax would fluctuate with the output, and might be cut off entirely if a mine should shut down because of a strike or otherwise for a season, that means of raising local revenue would be too precarious. The state could recoup a temporary loss from such cause by later imposing a direct tax on such mines while idle. The municipality and local schools would need their revenue each year, and would be injuriously embarrassed if they did not receive it. With a tonnage tax for state purposes only, leaving the communities free to raise their local revenues and conduct their home government as they do now, the objection referred to

would disappear. But these are administrative, not constitutional questions, and are not included in your inquiry.

Your second question is not so easy to answer. Would a tonnage tax be valid, in addition to direct taxes as now imposed, for local and state purposes? Of course such a tax would have to be imposed for exclusively state purposes, because under the ad valorem system of direct taxation, the localities where the mines are situated are collecting each year all the revenues they need for local purposes. If all mineral properties were treated alike, the mine owners could not plead the inequality of such a tax as compared with the taxes on other property, and with that question eliminated, I do not see why such a tax would not be valid. As a business proposition, I should think, however, that all the strictly state taxes on these properties ought to be imposed under one plan.

If the supreme court determines that the wide open tax amendment did not carry and become a part of the Constitution, then no tonnage tax could be imposed, except under the amendment to the Constitution adopted in 1896. That amendment, so far as it relates to the taxation of mineral property (with all extraneous matter eliminated) is as follows:

"The legislature may impose * * * upon the property within this state of all owners or operators of all mines or mineral ores * * * a tax as uniform as reasonably may be with taxes imposed on similar property or the earnings thereof within the state * * * and * * * it shall be competent for the legislature * * * to impose such tax * * * by taking as a basis of such imposition the * * * *quantity of production* * * * of such * * * owners * * * *or in such other manner or by such other method as the legislature may determine;* but the proceeds of such taxes on mining property shall be distributed between the state and the various political subdivisions thereof wherein the same is situated, in the same proportion as the taxes upon real property are distributed."

It then provides that ordinary real property owned by such persons must be assessed in the ordinary way.

The Tax Commission created under Chapter 13, Laws

of 1901, in its report to the special session of 1902, said of this amendment:

"No constitutional provision was ever more unhappily framed than the one in question."

The Commission went on to say that although it might ultimately be held that this provision authorized a tonnage tax on iron ore, it did not feel justified in assuming that such was its true interpretation.

I am of the opinion that under that amendment a tonnage tax could be imposed, but it would clearly have to be in lieu of all other taxes, and could not exceed a rate which would be substantially equal to the taxes on other real property. This constitutional provision expressly requires that the proceeds of a substituted tax on mineral property should be divided between the state and the localities where the mines are situated, in the same proportion as direct taxes on real property in the locality are apportioned. As the state's proportion of the taxes imposed on ordinary property is about one-tenth, it would follow that nine-tenths of a tonnage tax imposed under this provision would have to be apportioned to the locality where the mine from which the ore was taken is situated, and the rate would have to be adjusted so that such proportion would supply the local revenue needs of the locality. Under such a tax the state could not get more from the mines than it is getting now, and the method contemplated for raising and apportioning the tax is cumbersome, and would unwarrantably interfere with the welfare of the local communities where the mines are situated, by taking out of their hands the power to raise their local revenues.

Therefore, under this constitutional provision, I would answer your first question in the affirmative and both of the others in the negative.

Yours truly,
(Signed) E. T. YOUNG,
Attorney General.

THE PRESENT SITUATION.

The information gathered concerning the location, quality and conditions of ores by descriptions has made the problem of valuation and assessment much more certain and

equitable than before. The state now has information of what the ore is, and how extensive the deposits are. These facts, together with the recognition of the need of higher assessments against these properties, have, in some measure, modified the necessity of a tonnage tax. The inherent fact remains, however, that an ad valorem tax can not recognize the heritage element, the state's right to a share of the value of the earth's possessions found within the borders of the commonwealth, nor does it take into consideration the diminishing value element involved. This is the real essence of a tonnage tax, the fact that the value there found is distinctly a product of nature. So long as the present assessment continues, a good deal of difficulty and confusion can be removed by considering stock piles when in place on the property of the company as real estate. The definition of real estate in section 793 of the Revised Laws of 1905 might well be modified to make possible the assessment of stock piles as real estate.

DISSENT.

I am reluctantly constrained to dissent from the well considered views and recommendations of my colleagues relative to a tonnage tax on iron ore, for the following reasons, viz.:

1. As generally understood, such a tax is a flat rate of so much per ton upon all ore shipped from the mines regardless of the value and quality of the ore, and of the cost of mining it.

It needs only a brief visit to the iron ranges and a slight observation of the conditions of mining existing there, to satisfy any one of the unfairness and inequality, as between mine owners, of a flat rate tonnage tax upon ore. The methods of mining, the quality of the ore mined in the same mine, as well as in different mines, the difficulties and the cost of mining are radically different in the various properties. A ton of ore from a high grade, open pit mine, free from rock, sand and taconite, is far more valuable to the owner than several tons of ore from a low grade, underground or shaft mine, with "horses" of rock and beds of sand scattered through it.

A tax by weight alone, so much per ton, must necessarily be predicated upon the average value of a ton of the ore taxed. In fixing a rate of taxation it is not possible to absolutely ignore the value of the thing taxed. A tonnage tax applied to the product of the mines, the same principle of averaging values which the assessors and boards of review and of equalization throughout the state have long been in the habit of applying to acreage property, horses, cattle, pianos, etc., a practice notoriously inequitable and absurd, and inevitably resulting in the poorest property paying the highest, and the best paying the lowest tax.

The legitimate effect of such a tax would be to "freeze out" and close up the poorer and give an unfair advantage to the better mines, just as the internal revenue tax upon matches during the civil war period closed up all the small factories, and gave to the match trust its powerful monopoly and enormous profits.

The force of these objections was clearly recognized by the Minnesota tax commission in its 1901 report, page 44. That commission did not recommend a flat rate tonnage tax, but it did recommend a graduated system of taxation, the rates per ton being determined by the different grades of ore, according to their respective values in the market. This in fact was not a tonnage tax at all. It was a pure *ad valorem* tax based upon the value of the grade of ore so taxed and not upon its quantity.

A graduated tax of this nature is certainly much to be preferred to a flat rate tax. But any system of tonnage taxation which fails to recognize and substantially equalize the many differences existing between the mines, not only in the quality of the ore but also in the methods employed and the difficulties to be overcome in mining, is neither equal nor just as between the mine owners.

This commission in its adjustment of the assessed valuations of the iron properties last year attempted to meet the complicated problems above mentioned by classifying the various properties according to the quality of the ore mined and the method and difficulty of mining it. All properties of substantially the same character were grouped in a class by themselves; a rate of valuation per ton was given to each

class; and the value of the particular property was practically determined by multiplying the number of tons of ore it contained, as shown by the explorations made, by the rate of the class to which it belonged.

While it is not claimed that the valuations thus ascertained were absolutely accurate, and while it is admitted that some errors occurred, particularly in the classification of certain properties, still the system was logical and the valuations were, in most cases, substantially correct.

The only difference between this commission's system and that recommended by the commission of 1901 is that the former assessed the property as real estate and determined its valuation by the quality and quantity of the ore and the cost and difficulty of mining it, while the latter would assess it as personal property and determine its value by the quantity and quality of the ore only.

I cannot see anything in a tonnage tax, whether it be the flat rate or graduated system, which renders it preferable to the present *ad valorem* method. Being a personal property tax, it is not as easily nor as surely collectible as the existing tax on real estate.

2. A tonnage tax is levied upon the ore actually mined (or shipped) in each year. If it is a year of prosperity with a large and unusual demand for iron and steel, the output of the mines will be large, resulting in a correspondingly large revenue from the tax. If the year is one of depression, panic or stagnation, the output will be small and the revenue correspondingly small.

This would result in a perennial uncertainty as to the amount of revenue which the public would derive from this source which would be at all times embarrassing. The state, county and assessment districts which are entitled to the proceeds of the tax may or may not have a large income therefrom in any one year. Their respective treasuries may have a surplus or a deficit depending entirely upon the prosperity or depression of the iron and steel business for that year.

In any year in which there is a surplus of revenue by reason of a large output of the mines, such surplus is apt

to be squandered for unnecessary public purposes. It is not the habit of the governing bodies in American counties or municipalities, to allow a surplus to rust in the public vaults. In any year in which there is a deficit in the revenue by reason of a small output of the mines, such deficit must be made good by increased taxes upon real estate and personal property not included in the iron properties.

The existing *ad valorem* system presents no such uncertainty in the public revenues. They are practically fixed and determinable, each year, and are not dependent upon the fluctuations of the iron and steel market.

3. While I agree with my colleagues that it is not probable that any legislature will ever vindictively or unfairly raise a tonnage tax upon ore to a point which would be prohibitive, still it must be conceded that such a thing might be done. Ordinarily it is not what a legislature does, but what some of its members threaten to do that most disturbs the owners of large properties. In some states, fortunately not in Minnesota, the existence of large financial interests exposed to legislative attack, has been productive of a class of professional corporation baiters which in turn has furnished an excuse, if not a justification, for corporation interference with legislation. While it is probably true that no such methods have been or will be developed in this state, it is equally true that they have for a long time existed in other states. A tonnage tax on ore, easily increased or lowered by legislative enactment will always offer an opportunity and temptation for a hold-up or blackmail.

If the mine owners could be assured that a tonnage tax would always be fixed and reasonable, I do not see why they should not prefer it to the present *ad valorem* tax. In fat years they could easily pay the increased taxes resulting from a large output of ore, in lean years they would only pay according to the business done and not according to the value of the property held by them.

But under the existing *ad valorem* system they would pay practically the same tax each year, that is they would pay at the same tax rate and upon the same percentage of valuation as all other property pays regardless of the fluctuations of the iron market.

For these reasons I am not prepared at this time to join with my colleagues on the commission in recommending the substitution of a tonnage tax on ore for the existing *ad valorem* system.

In connection with this general subject of the taxation of the iron properties it may not be amiss to call attention to the fact that large incomes by way of royalties upon ore mined pass into the hands of the fee owners of the properties absolutely untouched by taxation. Thus far no method has been suggested by which such incomes can be constitutionally placed upon the tax rolls of the state. Whether or not it is possible to do this is a question well worthy of consideration and not easily determined.

O. M. HALL, Commissioner.

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**Government Exhibit Nos. 343-344.**

(January 28, 1913.)

(Comprising pages 49 to 89 of the volume entitled:)

SECOND BIENNIAL REPORT
of the
MINNESOTA TAX COMMISSION
to the
GOVERNOR AND LEGISLATURE
of the
STATE OF MINNESOTA.

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1910
SYNDICATE PRINTING COMPANY,
Minneapolis, Minn.

CHAPTER VI.

MINES AND MINERALS.

The biennial report of the tax commission for 1908 contains a brief description of the extent and character of the

iron ore deposits of Minnesota, the method of mining, and the classification of mineral properties for purposes of taxation. Since the publication of this report many requests have been received from the public for information regarding the grading of iron ores and the method of calculating tonnage. In order to give a clear idea of the situation short descriptions of the ranges, method of prospecting, etc., are presented. The commission is indebted to the Minnesota School of Mines for much of the following information in reference to this subject.

Minnesota has a worldwide reputation as an iron ore producer. Iron ore is the only metallic mineral mined in the state. The production of iron ore at present is practically confined to St. Louis and Itasca counties, which contain two producing ranges—the Vermillion and the Mesabi. They are located about 75 miles north of Duluth and extend approximately 100 miles in a southwesterly and northeasterly direction. A third range, the Cuyuna, has been largely explored and will in 1911 become a shipper. It is in Crow Wing county about 100 miles west of Duluth and extends some fifty miles in length parallel to the other ranges.

The total production to date is 224,428,809 tons of iron ore—195,703,424 tons from the Mesabi range and 29,125,385 tons from the Vermillion range. The rate of production is gradually increasing. In 1909 it amounted to 29,284,496 tons or about 60 per cent of all the iron ore mined and shipped in the United States.

GEOLOGY.

MESABI RANGE.

The rocks of the Mesabi range are slightly folded and dip to the southeast. The iron formation, locally called taconite, is a ferruginous chert which is overlain by a thick slate and underlain by a thin quartzite resting on granite. At the eastern end of the range the so-called taconite has been changed to a magnetite rock by a gabbro intrusion. The iron ore deposits are very irregular in shape but their horizontal extent is great as compared to their depth. Most of these bodies are less than 200 feet deep though a number of cases show a depth as great as 500 feet. The ore is a soft, granular hema-

tite of high grade, both Bessemer and non-Bessemer ore often existing in the same deposit in regular layers. The stratification of the original iron formation is preserved. The surface material is shallow, permitting stripping in many cases. The conditions are fairly represented by figure 4, on page 61.

VERMILION RANGE.

The rock is highly folded and the iron formation is largely altered to jasper. The country rock is a green stone in which the jasper occurs in troughs. The ore is associated with the jasper in these troughs. The ledge has a green stone foot-wall and consists of dense, hard, red or blue hematite. The lenses of ore are narrow and long and stand at a high angle and extend to say 1,300 feet in depth.

CUYUNA RANGE.

This range lies to the southwest of the Mesabi range. Its geology is as yet imperfectly known, due to the limited number of outcrops and the lack of development. The ore is principally hydrous limonite with some hematite. The iron formation has been altered and concentrated to make ore. This formation includes quartzite, slate and intrusive granite. The hanging wall is a slate and the foot-wall is commonly a schist. The ore bodies exist in the form of lenses 100 to 250 feet thick with a longer dimension parallel to the highly tilted bedding of the formation generally not much exceeding 2,000 feet and stand at a high angle. Their depth is as yet undetermined.

PROSPECTING FOR IRON ORE.

In metal mine prospecting the percussion drill is largely used for iron, zinc, lead, gypsum and coal work.

The churn drill or form of percussion drill as used on the Mesabi Iron Range consists of a chisel drill on an extensible hollow rod. This rod is attached by a flexible coupling to a pump which forces a stream of water into the hole and out of perforations near the attachment to the bit. This water returns inside the casing, which is an ordinary pipe, 3 inches in diameter when in surface material and 2 inches in rock and ore. The drill is manipulated by a rope passing several times over a drum driven by a 6 to 8 horsepower oscillating

engine, and the "jerk" is given by a man tightening or slacking the rope coil. The drill is rotated by hand, the driller standing on a platform built in the tripod. When boulders are encountered they are blasted out with dynamite. A churn drill outfit, boiler and all, costs from $1,000 to $2,000.

When taconite or hard slate is struck the churn drill has to be abandoned and the diamond drill is used until it passes through the taconite into the ore. It is customary to blast out the hole and force the casing down and then resume drilling with the churn drill. This blasting is done by suspending in the hole two or more sticks of dynamite and firing them with a battery. The casing, which had been partly pulled out, is then forced down with a drive weight, and the churn drill inside chops out the hole until the casing can follow to the bottom of the hole. A churn drill will make from 5 to 25 feet a day in a formation in which it can be used at all. Three men are required to run it. Wood and water hauling may run up expenses—sometimes requiring a team for each.

The surface indications of iron are meager and not very reliable. Some of the explorations have taken into account the topographical features of the district, and the theoretical geological conditions, but generally a tract located on or in the vicinity of the ranges is selected and drilled without regard to indications on the surface. The unit of explorations is forty acres, and this is called locally a "forty." The federal mining laws do not apply in Minnesota so the property is included in the vertical boundaries of the tract. The usual test for a forty-acre tract is to put five holes—one in the center and four 300 feet toward the center from each corner. However, drilling five holes is not considered a final test.

In proving up an ore body or testing completely, the practice is to divide the property into squares of 300 feet each, commencing 100 feet inside of the forty line, and drilling on the intersections. The Oliver Iron Mining Company ignores the survey lines, which are very irregular; they tie the tract to some surveyed property and lay it off in squares of 100 feet each. Drill holes are then sunk on each second and third intersection according to the purposes of the test

and the intersections are taken alternately so as to leave the smallest possible radius of undrilled land. Sometimes, in drilling for development, it is necessary to put holes in at closer intervals; especially where the work is along the edge of an irregular deposit. The ore bodies do not always taper out.

Most of the drilling is done by contract. The usual contract price is $3.00 per foot for churn drill and $6.00 per foot for diamond drill work. In some cases the diamond drill work costs more. Considerable test pitting is done at the surface at a cost of $1.60 to $2.00 per foot, a ten cent increase for each 10 feet after the first 20 feet being customary. Daily reports of the work are made to the contractor and frequent reports to the parties interested. Samples are taken every 5 feet, and wherever the formation changes, these samples are usually analyzed for iron, phosphorus, manganese and silica. The drill results are platted showing the location and the record of the holes. These reports are signed and dated and are considered reliable data as to the property. The contractors are well known and responsible, and misleading or false reports are rare.

The drill holes vary much in depth in different districts; near Hibbing one hole is over 350 feet in ore. It is a rule when ore is found to go through it. If quartzite is found this is taken as final, but most of the ore bodies are bottomed in taconite and sometimes the drill will go through a bed of ore into a taconite layer and then again into ore. It is generally believed that much ore exists below the present bottom. The old rule was to stop when taconite was found, but some of the best ore bodies are found to be below the taconite. Usually these are the extensions of ore bodies which outcrop to the north. In some parts of the range the finding of taconite under the surface is considered a good indication of an ore body beneath.

In some of the mines jumper drills worked by man power are used to check the grade of the ore or do surface work. The Mahoning mine sunk numerous test pits in the ore body to determine the character and grade in advance of mining. Much test pitting and drilling is now done before any prop-

erty is considered sufficiently well known to permit planning its mining.

The cost of the diamond drill outfits in use is from $2,500 to $4,000; the shallow nature of the work permitting a comparatively cheap equipment.

Prospecting on the Vermilion range is generally done with a diamond drill, followed up by the sinking of shafts and the driving of drifts after the ledge has been struck. On the Cuyuna range churn and diamond drills are used. The holes are much deeper as a rule than on the Mesabi and in case of the diamond drill work frequently driven on an angle. The contract price on the Cuyuna is $2.00 per foot for churn drilling and $4.00 per foot for diamond drilling.

Mining Methods.

On the Vermilion range the mining is confined to underground work and this will be the method employed upon the Cuyuna range. On the Mesabi range conditions are such that a large part of the mining may be done by open pit work. The ore ledges on the Vermilion stand at angles approaching 80 degrees and in some cases are vertical. The ore is hard—so hard that the ordinary air drill makes very slow progress through it and the expensive diamond drill must be largely used, both for mining and exploring the formation. A large amount of explosives is required to break the ore into small enough pieces to permit loading. The Cuyuna range ore, while not as hard as Vermilion ore nevertheless will be more expensive to mine than that of the Mesabi range.

Open Pit Mining.

The Mesabi ore is soft. It lies near the surface in an almost horizontal plane with a covering of 20 feet or more of glacial drift composed of sand and clay in which there are many huge boulders. The ore bodies vary in size but are fairly uniform in most respects. They may be a mile or more in length, though this is unusual. The width of the body sometimes reaches a half mile with a thickness running from 50 to 300 feet. The open pit method is much used both for stripping overburden and mining ore. There are, however,

many deposits where open pit mining cannot be employed. Its application is determined by the thickness and extent of the ore body relative to the overburden; the character of the ore; the distance of haul to the dump, etc. The increasing efficiency of the steam shovel, the greater cost of timbering and the lack of skilled miners necessary for underground mining, all have contributed toward extending open pit mining.

In open pit mining the ore body is reached by removing the overburden with a steam shovel, not unlike that used in railroad excavation work. Many million cubic yards have been stripped to lay bare the ore bodies and recently a stripping depth of 150 feet, involving 7 million cubic yards of stripping, was undertaken. The steam shovel has removed more material on the Mesabi range than the total excavation required for the Panama Canal.

A shovel crew consists of an engineer, a crane man, and four pit men to prepare the road bed and lay the track upon which the steam shovel stands. A "spotter" keeps the stripping train which stands on a parallel track moving as the successive cars are filled. The shovel lifts four or five tons at a time from the bank and dumps its load into cars. In many cases it is necessary to shake up the earth by the use of powder. Charges are placed in drill holes a short distance back from the edge of the bank, and on exploding the charge, which is done by means of the ordinary fuse and cap, the bank is loosened up to permit easy working for the shovel. The large boulders require breaking up by the use of dynamite. The dump cars loaded by the steam shovel are hauled to the dump by a "dinky" engine or by engines weighing as much as 60 tons.

In this way the ore is cleaned off and made ready for mining, the final cleaning up of the top of the ore being done by men with shovels and wheelbarrows. The ore is so soft that the shovel frequently digs it without blasting, though in general black powder is used to shake up the mass. It is the universal practice to load the ore direct from the pit into railroad cars which are drawn out three to ten at a time by a standard gauge locomotive. In this way the deposit is worked down bench by bench until a little of the rim only is

left. The grades become too heavy for the locomotive or the deposit too thin and underground mining finishes the work. The ore is generally carried in steel cars which have a nominal capacity of 50 tons each, actual capacity 46 tons. A standard shovel weighs 90 tons and one crew can load up to 8,000 tons of ore per ten-hour day, with 4,000 or 5,000 as an average day's work. Both stripping and ore handling are done on a two-shift basis of ten hours each. Work is suspended on Sunday except that of repairing the shovels.

"Milling" System:

The milling system is a combination of open pit and underground mining. The ore is stripped as in open pit mining. A shaft is sunk near the edge of the ore body and drifts are run into the ore, say, 60 feet below its top. Raises are made from the drift to the surface and through these the ore is "milled" down into chutes, loaded into cars and hauled by mules or electric power to the shaft where it is hoisted to the surface and dumped into railroad cars. When the ore is very soft it may be "milled" into the raises by use of the pick alone—in other cases blasting must be resorted to. In some cases the steam shovel is used to throw the ore into the "mill." As the "mill" becomes larger it finally becomes too dangerous for the miner on account of the steepness of the sides, and underground mining methods must be used. A relatively small amount of ore has been won on the Mesabi by "milling."

Underground Mining:

Only a few deposits permit the removal of all the ore without resorting to underground mining and many mines may be worked only by underground methods. Formerly the square set system, much used in metal mining elsewhere, was the accepted method on the Mesabi. While satisfactory in the main and still employed to a limited extent in a few places this method has given way to the "slicing and caving" system which is effective and economical. Nearly all the ore is recovered. The method consists in beginning at the top of the ore and working out a slice, dropping the surface as the work goes on. The caving of the surface is necessary

on account of the character of the roof, which is generally sand or a gravel. A shaft is sunk as in the milling system and a drift is run into the ore. Sub-levels are then driven at distances from 8 to 14 feet high and raises are run to the top of the ore. The ore is sliced out just wide enough to carry the roof while working. The ore is shoveled into the raises, at the bottom of which a chute is set from which the ore is drawn direct into mine cars. As each slice is taken out the overburden is caved—either of its own weight or is blasted down. This overburden packs so as to hold up laterally with a little temporary timbering and lagging.

Slice after slice is taken until the whole top of the ore body has been drawn into the raises when the same process is gone through on the next sub-level. The floors of the slices are covered with plank or boards so as to keep the sand from mixing with the ore and to make a roof for the next slice below. This floor under the sand follows the ore down with each slice. This general system has a number of modifications, permitting it to be used on the other ranges. It calls for the use of a small amount of timber and is comparatively free from accident to miners.

Regarding the three methods of mining in vogue it may be said in general that underground mining is increasing while open pit work has reached its maximum service.

TRANSPORTATION:

Three railroads, the Duluth and Iron Range, the Duluth, Missabe and Northern, and the Great Northern transport the ore from the Vermillion and Mesabi ranges to Two Harbors, West Duluth and Superior where the ore docks are situated. The Canadian Northern has, also, a line reaching Virginia from Duluth and will doubtless soon become an ore carrying road.

The haul is between 70 and 100 miles and the railroad freight per ton from the Mesabi range is 80 cents; from the Vermilion range $1.00. The Cuyuna range is reached by the Northern Pacific and the Soo with a haul of 100 miles and a freight rate of 65 cents per ton. From the ore docks the ore is loaded into large freight boats carrying from 8,000 to 10,-

000 tons each and conveyed down the lakes to the various Lake Erie and Michigan points and South Chicago at a rate of about 65 cents per ton.

MESABI RANGE ORE ESTIMATES.

To make an "ore estimate" certain recognized principles must be adapted to the particular case in hand, for each property presents an individual problem. In general, it may be said that a total tonnage estimate is the one first made. This will suffice in case of reserve ore bodies, and needs but little adjustment, provided the ore body has been thoroughly drilled. Where the drill data is incomplete it will be necessary from time to time to revise the ore estimate.

As to the method it may be briefly stated as follows: The outline of the ore body is established from the drill holes. The ore lying without the outer rim of holes is elliptical in outline and triangular in cross section. Inside this outer limit of the ore body is drawn a line connecting the centers of the bases of all these triangles. This line should be midway between the crest and toe of the slope of the ore bank.

The area inclosed, multiplied by the average depth of ore in all holes within the area, is the total volume of ore.

The number of cubic feet per ton for various grades of ore has been established by experience dealing with every part of the ranges and it varies from 13 cubic feet for 62 per cent iron to 17 cubic feet for 49 per cent iron. All analyses are based on the dried samples.

The ore is carefully graded into: (a) bessemer, (b) non-bessemer, and in some cases, into (c) ore material.

The limiting analyses are about as follows:

| | Iron Per Cent | Phosphorus Per Cent | Silicia Per Cent | Manganese Per Cent |
|---|---|---|---|---|
| Bessemer ..... | 61.55 | .047 | 4.6 | 1.5 |
| Non-Bessemer ... | 57.20 | .099 | 7.2 | 1.0 |

All ore above 49 per cent is considered merchantable.

The ore material class is made up of the ore lying between 40 per cent and 49 per cent. It may or may not have

commercial value, depending upon whether it can be washed or concentrated.

Reference to figures 1, 2, 3 and 4, on pages 58 to 61, will make clear other points not here described.

The ore body illustrated in figures 1 and 4 on pages 58 and 61 is a hypothetical one since drill records and other maps of such properties are confidential and on that account may not be published. The illustration, however, is typical of the average ore body.

Furthermore, from the drill records and the locations of drill holes, cross sections of the ore body may be made. The sections may be made by passing vertical planes through adjoining holes; then all the planes (in practically the same plane) joined together, constitute a section. By many engineers a plane is passed which cuts as many of the holes in one direction as possible, and those holes not on the section are projected upon it. This second method is simple and can be used in making estimates without a correction for the length of section due to the broken planes. A cross section is shown in figure 4 on page 61.

Some inaccuracy occurs in that the hole is off the section and its does not show the true depth of ore at the place indicated. Interpolation may be used to correct this depth from adjoining holes by a section at right angles to the one in question.

The ore sometimes ends abruptly against rock and then again will run out in long lenses. In general it may be stated that the edge of the ore body is placed at a distance outside the outer rim holes equal to the depth of ore in the hole. An examination of the sections will show the different grades of ore more or less continuous in layers. From these sections carefully drawn to scale their areas may be measured and by the method of "average end areas" the total volume of the body obtained and the number of tons computed. This cross section method usually checks closely the first method described.

As the shipments are made from each property the number of tons shipped is annually deducted so that the ore remaining in the mine is checked up each year.

Where doubtful drill records, irregular, or large rock intrusions render the above described methods unsatisfactory it becomes necessary to make a "pillar estimate" in order to ascertain the tonnage in the mine. This consists in measuring up the ore pillars from the underground maps, giving due consideration to "probable ore" thus determining the ore tonnage.

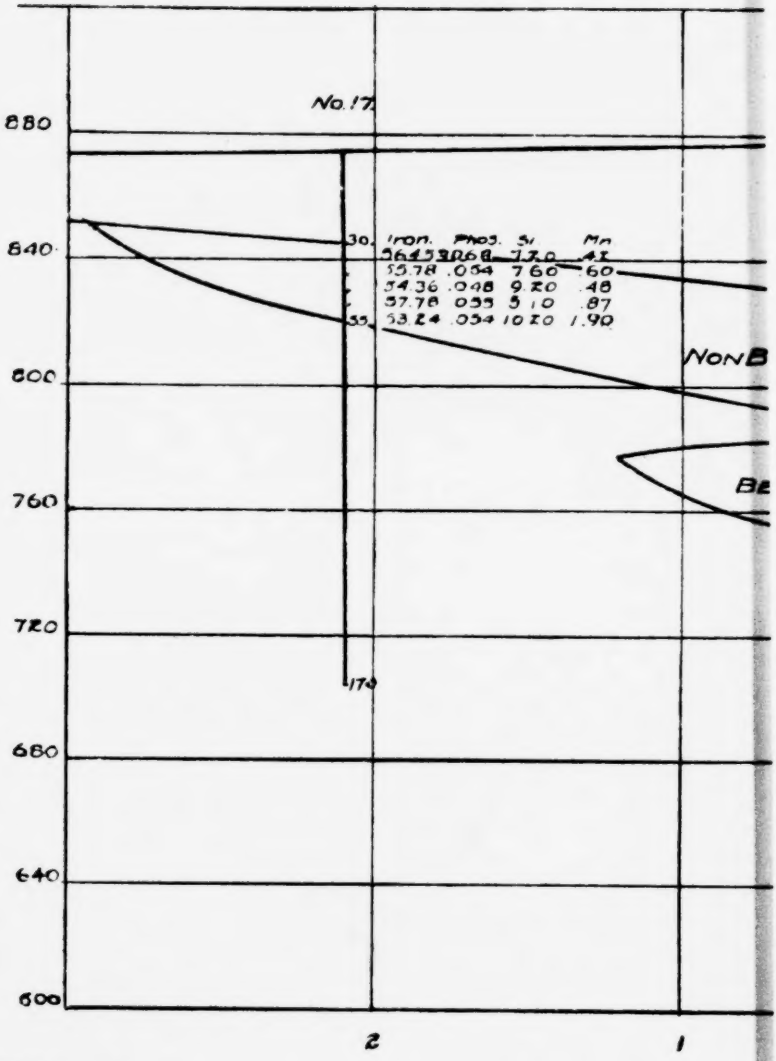
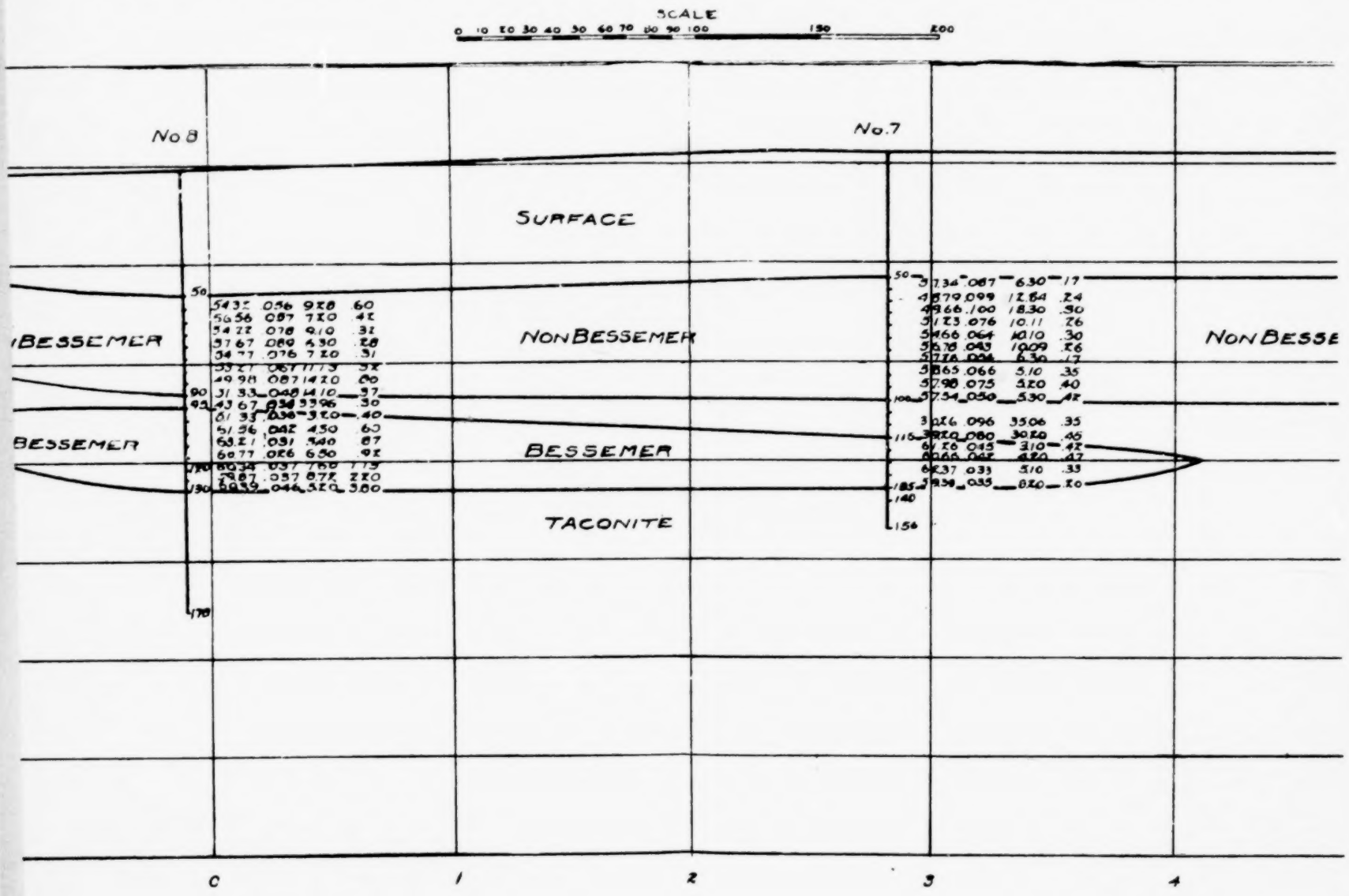
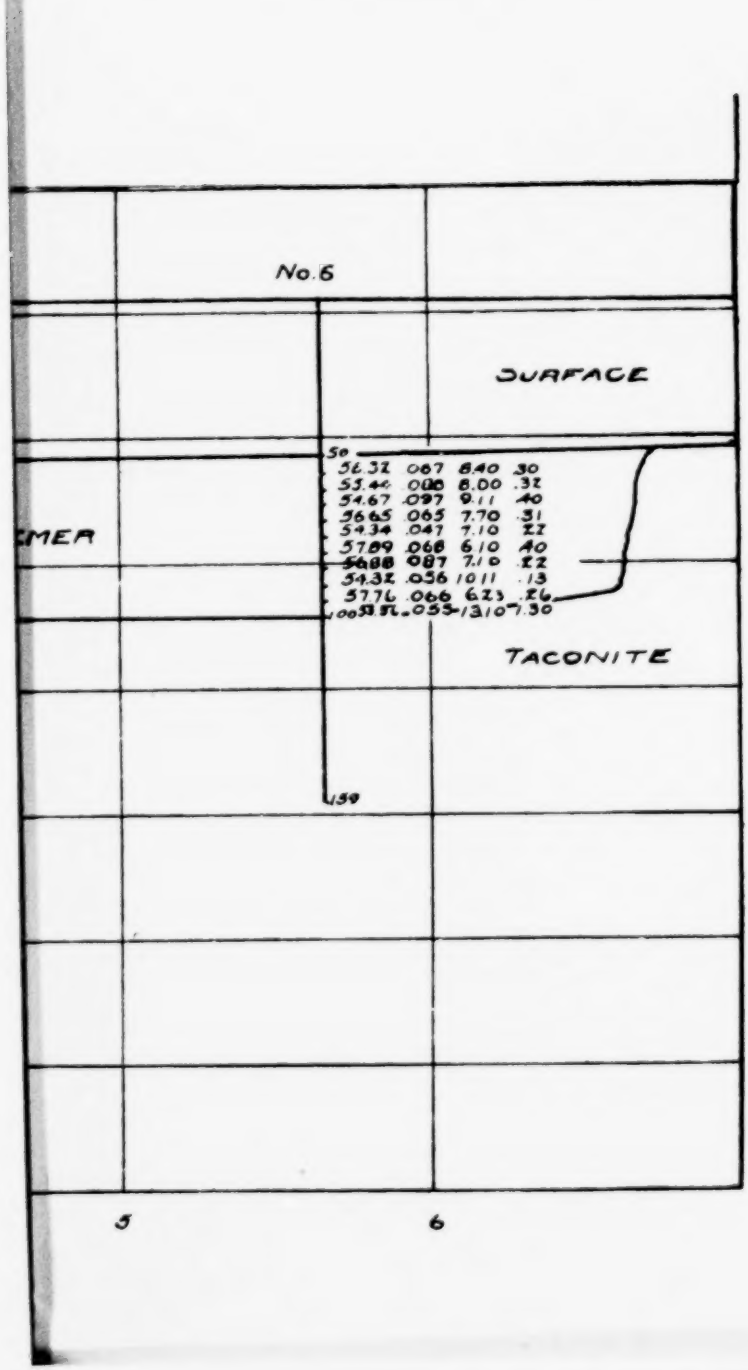

No. 17
880
840
800
760
720
680
640
600
30
55
170
Iron. Phos. Si Mn
55.78 .054 7.60 .60
54.36 .048 9.20 .48
57.78 .055 5.10 .87
53.24 .054 10.20 1.90
NonB
B
2
1

Fig. 4.

# Cross Section 12.

## N.W. 1/4 of S.E. 1/4 of Sec. 21, Town. 56, Range 21.




No.6
SURFACE
50
56.32 .067 8.40 .30
55.44 .080 8.00 .32
54.67 .097 9.11 .40
56.65 .065 7.70 .31
54.34 .047 7.10 .22
57.89 .068 6.10 .40
56.88 .087 7.10 .22
54.32 .056 10.11 .13
57.76 .066 6.23 .26
100 53.52 .055 13.10 7.30
TACONITE
150
5
6

WESTERN MESABI RANGE ESTIMATES.

In the report of the School of Mines to the tax commission under date of August 28, 1909, certain statements were made relative to ore conditions on the Western Mesabi. A more recent investigation practically confirms these conclusions, which is quoted, slightly modified, as follows:

The distinguishing feature of the Western Mesabi ore formation is the incompleteness and irregularity of the alteration as compared with the Eastern Mesabi. The ore bodies show all the gradations from ferruginous chert to completely oxidized iron ore almost free from silica and alumina.

The ore may be generally characterized as silicious, carrying from 30 per cent to slightly over 60 per cent iron; the phosphorus compared with Eastern Mesabi ores is notably low, rarely above 0.05 per cent and frequently as low as 0.01 per cent. The percentage of silica varies from 25 per cent to 75 per cent—35 per cent being perhaps a normal silica percentage. This silica or "sand" is not water-worn; it consists of small sharp fragments derived from the disintegration of the ferruginous chert, the so-called "iron bearing taconite."

Experiments in concentration indicate that, while much of the silica is so combined with iron as to be wholly unsusceptible of concentration, the probabilities are decidedly in favor of concentration—or more correctly speaking, washing—being developed to a commercial success.

The softness of the ore formation practically limits drill prospecting to churn drilling. Since much of the ore is largely composed of the sharp "sand" just referred to it is difficult if not impossible to judge from an examination of the drillings (which consist wholly of sharp fragments) whether the stratum passed through is taconite or paint-rock, or whether it is ore material that can be commercially washed.

Recent development by test pits and raises has disclosed large quantities of "paint-rock." One of the distinguishing features of paint-rock on the Eastern Mesabi is the presence of comparatively large percentages of alumina and phosphorus which are readily determined by analysis. On the Western Mesabi the paint-rock contains so little alumina and phosphorus that dependence cannot be placed upon the chem-

ical analysis of drill samples to distinguish between paint rock and ore. Until quite recently ore estimates in the Western Mesabi district were based wholly upon chemical analysis. Three grades were established: first, a non-bessemer shipping ore containing 57 per cent iron and 0.04 per cent phosphorus of which quite a little tonnage was developed; second, a first-class silicious ore averaging 49 per cent iron and 0.04 per cent phosphorus; third, a second-class silicious ore averaging 40 per cent iron and 0.04 per cent phosphorus. It was assumed that the bulk of the silicious ore could be successfully raised to merchantable grade by washing. The sinking of test pits quickly showed a wide variation in chemical analysis of churn drill samples and test pit samples from the same stratum. This variation was caused by a washing away of silica and alumina and concentration of iron due to the churning action in the drill hole. The alumina in some cases was reduced from 17 per cent to 0.2 per cent while the iron was correspondingly increased—in some instances sufficiently to make drill samples run 7 per cent higher than test-pit samples.

This selective or concentration action within the drill hole might readily make a poor class of paint-rock appear to be a good grade of non-bessemer ore; it might readily show a large tonnage of washable ore in ground which really averaged as low as 30 per cent iron.

A number of comparisons between drill hole and test pit data show that a concentration of iron in the drill hole is inevitable. The degree of concentration varies greatly but would seem to average about 4 per cent. Therefore in grading this 4 per cent reduction has been adopted.

The impracticability of using the chemical analysis as a basis for the classification of ore as "washable" and "non-washable" led to the adoption of a classification of test pit and drill samples, according to physical characteristics into "ore," "sand and ore," "paint-rock" and "taconite." A number of estimates were made on this plan by a leading mining company but its engineers have now abandoned the method as unsatisfactory.

It would be impossible for two men, however expert and conscientious, to check within reasonable limits on an ore

estimate based purely on the physical characteristics of drill samples. Therefore estimates are based on the chemical analysis.

As a matter of fact, present day estimates in the Western Mesabi district are largely speculative and will so remain until the washing plant now in construction at Coleraine has thoroughly tested out the various ore bodies, determining the ratio of washable to non-washable ore and the ratio of concentration.

VERMILION RANGE ESTIMATES.

Estimates are made for this range by measuring up the pillars of ore from the underground maps.

CUYUNA RANGE ESTIMATES.

This district has been visited and studied. At present few accurate conclusions can be drawn respecting the ore bodies.

Much churn and diamond drilling has been completed. Owing to the fact that the ore lies much deeper than on the Mesabi range and occurs in lenticular masses with a steep dip, it will require much underground development to thoroughly prove the grade and tonnage.

Therefore tax valuation on Cuyuna range properties must be arbitrary for the present.

VERIFICATION OF ORE GRADES AND TONNAGE ESTIMATES.

An important part of the work of the tax commission is the determination of the values of the various iron ore properties of the state for purposes of taxation. These values are determined largely by the quality and quantity of ore to be found in the different properties. Prior to 1909, the classification of iron ore and tonnage estimates was based on blue prints of explorations furnished by owners, lessees or operators of the various properties. While the commission had no reason to feel that these reports were not reasonably accurate and reliable, yet it was deemed advisable to have the explorations, computations and estimates verified by disinterested and competent engineers whose reports would be generally accepted as substantially correct.

THE WORK OF THE SCHOOL OF MINES.

Realizing that the character of the work was such as might appeal to the mining department of the state university, and feeling that if the work were done under the supervision of some member of the corps of professors of the school of mines it would command confidence and be generally accepted as accurate and reliable, the commission entered into communication in reference to the matter with Prof. William R. Appleby, dean of the school of mines, and Prof. Charles E. van Barneveld, professor of mining engineering of the state university. After several conferences Prof. Edward P. McCarty of the school of mines was designated to undertake the work.

Professor McCarty entered upon his work in June, 1909, and continued his investigations through the months of July and August of that year with such satisfactory results that the commission decided to enlarge the scope of the work. With this object in view, a letter was addressed to the board of regents of the state university calling attention to the value of the work, both to the state and the university, and asking their assistance and co-operation in continuing the work during the coming season. The matter was referred to the engineering committee of the board of regents, and at a conference with this committee held at the office of the tax commission December 20, 1909, arrangements were made for continuing the work under the supervision of the school of mines of the state university.

Professor McCarty was again placed in direct charge of the work and has rendered most efficient and valuable service to the state. A total of 89 properties have been examined to date, showing a net increase in tonnage estimates of 32,698,537 tons.

The commission desires to express its thorough appreciation of the valuable aid rendered us by Dean Appleby, Professor van Barneveld, Professor McCarty and the School of Mines in our efforts to fully and fairly assess the mineral properties of the state.

The purpose, character and extent of this work is fully set forth in the following letters and reports from the school of mines of the state university.

REPORT OF THE SCHOOL OF MINES.

"MINNEAPOLIS, MINN., October 1, 1910.

"HON. SAMUEL LORD, CHAIRMAN MINNESOTA TAX COMMISSION,
ST. PAUL, MINN.

"SIR: The accompanying report is submitted in compliance with your letter of August 8, 1910, and with instructions received from the Secretary of the State Tax Commission, under date of May 19, 1909, as follows:

"MAY 19, 1909.

"PROF. WILLIAM R. APPLEBY, DEAN MINNESOTA SCHOOL OF MINES, STATE UNIVERSITY, MINNEAPOLIS.

"DEAR SIR: After the conference of the Tax Commission with yourself and Prof. Chas. E. van Barneveld, Professor of Mining Engineering, concerning the general mining situation in the state, the Commission has decided to call upon the Mining Department of the School of Mines of the State University for official assistance in a systematic checking up to tonnage estimates and verification of exploration and drill reports as furnished by various operating companies. We desire also an investigation regarding each property with a report on the same as to prevailing conditions found to exist, such as: (1) classification, structure and physical characteristics of the ore; (2) the average per cent, natural and dried, of Metallic iron and of Phosphorus; and (3) the presence of deteriorating elements, if in excess with the percentages of each. Give (4) the cubic feet of measurement used and the factors employed in determining the tonnage; and (5) if mining conditions are such, or if rock exists to such an extent, as to justify a deduction, state the percentage.

"We desire you to give particular attention to the conditions existing on the Western Mesabi Range, where silica is in such excess as to make much of that ore merchantable only after concentration, and to report as to what reduction factors should be used to arrive at the taxable value of these deposits.

"We therefore gladly accept the expert services of Prof. Edward P. McCarty of the School of Mines to undertake this work under the direction and in the name of the Mining Department and report on the following mining properties:

| "Mine. | Operating Company. |
|---|---|
| Morton | Tod-Stambaugh Company |
| Grant | Interstate Iron Company |
| Biwabik & Cincinnati | Biwabik Iron Mining Company |
| Scranton | Pickands, Mather & Company |
| Mahoning | Mahoning Ore & Steel Company |
| Sauntry-Alpena | Oliver Iron Mining Company |
| Leonidas | Oliver Iron Mining Company |
| Canisteo | Oliver Iron Mining Company |
| Holman | Oliver Iron Mining Company |

"Blue prints of drill and exploration reports of these properties are herewith delivered to you for his use, and I enclose credentials which upon presentation will enable him to have access to the records of the mining companies for any other data desired.

"Yours very truly,

"(Signed) RUKARD HURD, Secretary.

"After a two weeks' preliminary review of the situation, active field work was begun on June 14, 1909.

"The following properties were examined and estimated during the next three months:

| "Mine. | Operating Company. |
|---|---|
| Alpena | Oliver Iron Mining Company |
| Biwabik | Biwabik Mining Company |
| Canisteo | Oliver Iron Mining Company |
| Cincinnati | Biwabik Mining Company |
| Grant | Interstate Iron Company |
| Holman | Oliver Iron Mining Company |
| Leonidas | Oliver Iron Mining Company |
| Mahoning | Mahoning Ore & Steel Company |
| Morton | Tod-Stambaugh Company |
| Sauntry | Oliver Iron Mining Company |
| Scranton | Pickands, Mather |

"On nine of the properties there was shown an increase of 14,727,539 tons; on the remaining two, a decrease of 2,204,652 tons—leaving a total net increase of 12,522,887 tons.

"Active work was then suspended while considering the question of broadening the work and assigning it permanently to the State School of Mines.

"The following letter from the Tax Commission and the report of the Committee of the Board of Regents, to whom was referred the letter, show the final arrangements for continuing the work.

"DECEMBER 11, 1909.

"THE BOARD OF REGENTS OF UNIVERSITY OF MINNESOTA,
MINNEAPOLIS, MINNESOTA.

"GENTLEMEN: An important part of the work of the Minnesota Tax Commission is the determination for purposes of taxation of the values of the various iron ore properties in the state. There are at the present time between 300 and 400 such properties in the counties of St. Louis and Itasca which have been quite thoroughly explored by drillings, test pits and shafts and in which the quantity and quality of iron ore has been computed and ascertained with more or less accuracy. This Commission has secured copies of the blue prints and reports of such explorations in nearly all of these properties from the owners, lessees or operators of the same, together with their computations and estimates of the quality and quantity of ore in each property. As all of this information is ex parte, the Commission has necessarily been compelled to accept as correct the computations, estimates and reports made by persons directly interested in the several properties. It seems to us that the interests of the state as well of those parties themselves require, or at least make it very desirable, that these explorations, computations and estimates should be as far as is practicable "checked up" and verified by disinterested and competent engineers whose reports in the premises would be generally accepted and acquiesced in as substantially correct.

"This Commission was and is of the opinion that work of this character could be best done by some member of the corps of professors in the mining department of the University, and that when so done the work would command the confidence of all and be generally accepted. Upon this view of the situation the Commission entered into communication with Dean Appleby, Prof. Chas. E. van Barneveld and Prof. Edward P. McCarty of the School of Mines and succeeded in securing their services for a few weeks during the last summer vacation in examining some of the properties, checking up and correcting the reported exploration and computation and thus determining the quantity and quality of the ore in some of the properties referred to. This work was experimental on the part of the Commission. But the results exceed our most sanguine expectations. In the short time which they could devote to this work these gentlemen were able to examine eleven of the properties and to make a very complete and thorough report thereon. In short, the results of their labors were very satisfactory to us, and we believe have been generally acquiesced in by the persons directly interested in such properties.

"So satisfactory has been the result of this experiment that the Commission deems it not only desirable but very essential that the work thus auspiciously begun should be continued and extended as rapidly as possible so as to ultimately embrace all of the mining properties owned by the state. Such a work will necessarily require several years for its completion.

"You will readily understand that the moral influence and public confidence in the accuracy and fairness of such work will be much greater if the same is done under the auspices of the State University and of its School of Mines, than if done by private engineers selected by the Commission.

"We believe that work of this character, putting the School of Mines, its instructors and students in close intimacy with practical mining will be most serviceable to that department of the University, that it in effect utilizes the University for the purpose of the state, and will not only be of great ben-

efit to the people of the state but of even greater utility to the University.

"We therefore thus briefly call your attention to the matter in the hope that some arrangement can be made between ourselves and this Commission whereby the work herein outlined can be placed under the personal charge of some member of the University faculty, if necessary an additional member, whose special duty it shall be to continue and complete the work so well begun by the gentlemen above named.

"Should this suggestion be deemed worthy of your consideration we will be very much pleased to meet your Board or any Committee which you may appoint for that purpose with a view to a fuller discussion and a possible agreement in the matter.

"Very respectfully,

"MINNESOTA TAX COMMISSION,

(Signed) SAMUEL LORD, Chairman.

"The following report was made by the Engineering Committee of the Board of Regents, and approved by the Board March 22, 1910.

"JANUARY 18, 1910.

"TO THE PRESIDENT, BOARD OF REGENTS,
THE UNIVERSITY OF MINNESOTA,
MINNEAPOLIS, MINN.

"At a meeting of the Board of Regents held at the President's Office on Dec. 14, 1909, a communication from the Tax Commission requesting the School of Mines to do certain work for the Tax Commission in the matter of estimating and investigating iron ores was referred to the Engineering Committee of the Board with instructions to meet with the Tax Commission and arrive at an understanding with them as to details. Our committee met with the Tax Commission at the Capitol Building in St. Paul on Dec. 20, 1909, and the memoranda herewith attached represents the understanding arrived at for the mutual guidance of the School of Mines and the Tax Commission and we herewith submit this

memoranda with the recommendation that it be approved and spread upon the Minutes of the Board.

(Signed) H. B. Hovland, Chairman.

"Memorandum of Meeting of Committee of Board of Regents and Tax Commission.

"Present at meeting held at State Capitol, 10:00 a. m. Monday, December 20, 1909: Board of Regents—Hon. John Lind, Hon. H. B. Hovland, Hon. B. F. Nelson, Hon. C. G. Schulz; Tax Commission—Hon. S. Lord, Hon. J. G. Armson, Hon. O. M. Hall, Rukard Hurd, Secretary; School of Mines—W. R. Appleby, Chas. E. van Barneveld, E. P. McCarty.

"Object of the meeting was to decide on details concerning the work to be done by the School of Mines for the Tax Commission.

"Character of Work.—The Commission explained that the work should consist of checking estimates of ore tonnage from data submitted by the Commission. In some instances where field data were necessary, they were obtained by the School. The work was to be continuous and permanent until completed. The School of Mines was to be officially recognized in charge of the details, securing necessary assistance, etc.

"All work in connection with examining, checking, estimating and reporting on ore reserves for Commission was to be done by the School of Mines, and all men employed on such work by the Commission were to be under direct supervision of the School.

"Amount of Work.—No definite statement could be made by the Commission on this point. They agreed to be reasonable in their demands on the School, furnishing as far ahead as possible a list of properties to be checked up and designating those on which they desired reports first. They would thus arrange work in such a way that field work, in plane and underground surveying, would not be interfered with.

"Personnel.—Owing to the satisfaction already given by Professor E. P. McCarty he was to continue in direct supervision of the work for the coming year. He was to have the assistance of the new instructor recently allowed the School

by the Board of Regents. In the interest of accuracy and on account of the confidential character of the work, students will not be employed on this work, neither will they have access to reports.

"EXPENSES.—The Board of Regents were to provide necessary funds for engaging suitable instructors in the School of Mines who would be capable of doing the work required by the Commission. At present the services of Prof. F. P. McCarty and the new instructor (to be appointed) were considered sufficient. As the salaries of these men were to be paid by the Board of Regents, the Commission agreed to provide for all field expenses. In the case of Professor McCarty the Commission and not the Board of Regents were to pay him for his services during July and August at the same monthly rate as salary paid him by the University. The new instructor was to be engaged for twelve months and his salary was to be paid by the University. The general opinion was this: That the University should engage, pay and provide the instructors, as their first duties were along educational lines and that the Commission should call on the School of Mines for expert work in the line already designated and would pay all field expenses.

"REPORTS.—Reports were to come direct from the School of Mines and signed by the Dean. They were to be made to the Tax Commission, and all mine representatives interested were to call on the Commission for information and not the School of Mines. The School was to keep duplicate of all reports on file in its office. The duplicate reports were to be open to inspection at any time by the Board of Regents only. The School was to make at suitable times a report to the Board of Regents covering men on work, number of properties checked, etc., and all other items of interest pertaining to the work.

"The following opinions were expressed: That the School of Mines in serving the Commission was in reality serving the State.

"That the work to be done by the School would benefit the University directly as its mineral lands were developed.

"That mutual benefits would be secured to all concerned

through the School of Mines meeting the demands for such high-grade technical work.

"Properties Reported On—

"The following properties have been reported on from February 1, 1910, to date:

| Name of Mine. | Operating Company. |
|---|---|
| Adams-Spruce | Oliver Iron Mining Company. |
| Adriatic | Adriatic Mining Co. |
| Albany | Pickands, Mather & Co. |
| Bangor | Pickands, Mather & Co. |
| Bessemer No. 3 | Republic Iron & Steel Co. |
| Bessemer No. 4 | Republic Iron & Steel Co. |
| Bray | Republic Iron & Steel Co. |
| Brunt | M. A. Hanna & Co. |
| Cavour | Cavour Mining Co. |
| Cleveland Cliffs Prospect | Cleveland Cliffs Mining Co. |
| Columbia | Interstate Iron Co. |
| Commodore | Corrigan, McKinney & Co. |
| Corsica | Pickands, Mather & Co. |
| Crosby | Cleveland Cliffs Mining Co. |
| Croxton | M. A. Hanna & Co. |
| Cyprus | Cyprus Mining Co. |
| Elba | Pickands, Mather & Co. |
| Elizabeth | John Helmer |
| Euclid | Euclid Mining Co. |
| Franklin | Republic Iron & Steel Co. |
| Fowler | Interstate Iron Co. |
| Gray | A. M. Miller |
| Hanna | M. A. Hanna & Co. |
| Hawkins | Wisconsin Steel Co. |
| Hector | Interstate Iron Co. |
| Helmer | Swallow & Hopkins |
| Higgins No. 2 | Oliver Iron Mining Co. |
| Hobart | M. A. Hanna & Co. |
| Holman | Oliver Iron Mining Co. |
| Hudson | Pickands, Mather & Co. |
| Iroquois | Rogers, Brown Iron Co. |
| Kellogg | New York State Steel Co. |

| | |
|---|---|
| Kinney | Republic Iron & Steel Co. |
| La Belle | Pitt Iron Mining Co. |
| La Rue | M. A. Hanna & Co. |
| Larkin | New York State Steel Co. |
| Laura | Inland Steel Co. |
| Lincoln | Interstate Iron Co. |
| Leetonia | Interstate Iron Co. |
| Longyear | Interstate Iron Co. |
| Madeira | A. B. Coates |
| Malta | Pickands, Mather & Co. |
| Mariska | Republic Iron & Steel Co. |
| Mayas | George A. St. Clair |
| Meadow | Interstate Iron Co. |
| Minorca | Pickands, Mather & Co. |
| Miller | Pitt Iron Mining Co. |
| Mississippi Land Co.'s Prospect | Mississippi Land Co. |
| Mohawk | Pickands, Mather & Co. |
| Monica | Republic Iron & Steel Co. |
| McEwen | Oliver Iron Mining Co. |
| Nassau | Interstate Iron Co. |
| Onondaga | Republic Iron & Steel Co. |
| Pearce | Meriden Iron Co. |
| Pearson | Pearson Mining Co. |
| Perkins | Perkins Mining Co. |
| Pettit | Republic Iron & Steel Co. |
| Schley | Republic Iron & Steel Co. |
| St. James | Corrigan, McKinney & Co. |
| St. Paul | Corrigan, McKinney & Co. |
| State Lease No. 442 | |
| Syracuse | Pickands, Mather & Co. |
| Seville | Seville Mining Co. |
| Spring | George A. St. Clair |
| Stevenson | Corrigan, McKinney & Co. |
| Susquehanna | Rogers, Brown Iron Co. |
| Troy | Pickands, Mather & Co. |
| Union | Republic Iron & Steel Co. |
| Utica | Pickands, Mather & Co. |
| Victoria | Republic Iron & Steel Co. |
| Virginia Townsite | A. B. Coates |
| Virginia | Pickands, Mather & Co. |

| | |
|---|---|
| Wacootah | Pitt Iron Mining Co. |
| Wills | Republic Iron & Steel Co. |
| Whiteside Prospect | R. B. Whiteside |
| Wickwire | Wickwire Steel Co. |
| Woodbridge | Fort Henry Mining Co. |
| Yawkey | Pickands, Mather & Co. |

"The above listed mines show increases on sixty (60) properties equal to 27,166,307 tons and decreases on eighteen (18) properties equal to 6,990,657 tons. This gives a total net increase for the above period of 20,175,650 tons.

"MANNER OF WORK—

"The exploration data and maps submitted to us are carefully examined to determine whether sufficient data are available for an estimate, and also what possible effect additional information might have. In the case of operating mines we found it necessary to visit each mine to locate the boundaries of the ore-bodies in so far as development permitted and to investigate any conditions and data which might have a bearing on tonnage, grade, character and accessibility of the ore body. These personal inspections of operating mines and the additional information thus obtained were of material assistance in intelligently considering estimates on adjoining prospects.

"SCOPE AND RESULTS OF WORK—

"Eight trips to the Mesabi Range have been made to date, in all we traveled 4,250 miles and spent 61 days in field work. In addition to this field work 226 days were devoted to office work, computing and mapping the field data.

"A total of eighty-nine (89) properties have been examined and estimated to date, showing a net increase of 32,698,537 tons. Preliminary reviews have been made on a number of properties that have not yet been submitted for final estimate. In addition we have rendered technical aid to the Commission in a number of cases where the tonnage was not in question.

"The present system of revision and checking estimates has resulted in quickening the sense of responsibility of

the part of those mining companies who have in the past delayed reports or submitted hasty estimates to the Commission. This has unquestionably resulted in an increased tonnage from properties not yet examined.

"RECOMMENDATIONS—

"A review of our past experience points strongly to the need for more field work. In most cases personal inspection of the mine and of the latest maps and records is essential in making an accurate and prompt estimate. Reduction on account of rock, paint-rock, etc., can be made in general only from a direct examination of the ore in place.

"We, therefore, recommend that in planning the work for the next year provision be made to meet the expenses of at least double the field work done this year.

"ACKNOWLEDGMENT—

"We wish to express our thorough appreciation of the generous aid extended to us by the officials of the various mining companies. Without exception they promptly and unreservedly granted every request for access to records, and facilitated our work by placing their office force at our service.

"MINNESOTA SCHOOL OF MINES,
(Signed) W. R. Appleby, Dean."

SPECIAL REPORT OF THE SCHOOL OF MINES ON THE CUYUNA RANGE

"MINNEAPOLIS, MINN., NOV. 11, 1910.

"MR. RUKARD HURD, SECRETARY MINNESOTA TAX COMMISSION,
STATE CAPITOL, ST. PAUL, MINN.

"DEAR SIR: We inspected the Cuyuna range between October 21st and 24th, 1910, and herewith submit our report relative to the ore deposits and their grade:

"ORE DEPOSITS—

"The deposits are irregular in shape. The drilling shows them in the form of lenses which are commonly narrow and may be single or double; when double they are parallel

and are separated by lean material. There are no outcrops and no topographic features to indicate the presence of an ore deposit. The iron-bearing formation continues for miles though the bodies of ore are small and in general end abruptly; the greatest length is approximately 2,000 feet.

"Two hundred (200) feet is probably close to the average width for the north part of the range, while the width is considerably less on the south end.

"The greatest depth shown to date is 850 feet. Greater depths are obtained on the north than on the south range. Four hundred and fifty (450) feet is in all probability a fair average depth. These lenses of ore are pitched at a high angle in many cases nearly vertical.

"Samples taken from the Kennedy mine, situated in the $N^1_2$ of the $SE^1_4$ of Section 30-47-28, average 57.06 per cent iron, .119 per cent phosphorus, .61 per cent manganese, 11.1 per cent silica with a moisture of approximately 10 per cent. This is typical of the ore as it is found on the north end of the range. The percentage of iron is lower on the south end. Cuyuna ores are hydrous and silicious limonites, usually red or brown in color, intermixed with paint rock. Some hematites are found. From present indications the percentage of iron is higher near the top of the ore body and decreases with depth.

"Over the range in general the phosphorus is higher than that just shown in the Kennedy mine. Bessemer ore seems to exist only in very small quantities.

"Manganese will run about as shown in the Kennedy.

"Silica is high and usually increases as the iron decreases until the ore becomes too lean to be merchantable.

"Moisture is as yet largely undetermined, but it may in some cases reach 14 per cent.

"The texture of the ore runs from soft, slaty to a dense hard, silicious ore.

"The ore will probably be rated only as of medium grade. Its physical characteristics make it a desirable furnace material, while low iron and high silica detract from its value.

-MINING—

"Mining must be done entirely by underground methods —no stripping being possible. At present the Kennedy mine owned by Rogers, Brown & Company is the only one hoisting ore. Two levels are opened up on this property and a stock pile has accumulated awaiting the completion of the railroad and ore docks. The season of 1911 should see a fair production from this mine.

"The Armour shaft of Rogers, Brown & Company in the SE¼ of the NE¼ of Section 11-46-29 is made of concrete and has been sunk 78 feet to the ledge and will be continued to 400 feet in depth. Railroad tracks have been provided for this shaft and the property should be a producer in 1911.

"At Ironton in the SE¼ of the NE¼, Section 10-46-29, a location is now building and a shaft just begun. Tracks and yards are already in place. This property also belongs to Rogers, Brown & Company.

"There are no other active mines at present on the Cuyuna range.

"Yours very truly,
"MINNESOTA SCHOOL OF MINES,
(Signed) W. R. APPLEBY, Dean."

## VALUATION OF MINES AND MINERAL LANDS FOR TAXATION PURPOSES.

One of the most important problems that confronted the tax commission when it was first created in 1907 was the valuation of mines and mineral properties for purposes of taxation. Prior to that time no definite method of ascertaining the quantity, quality or value of iron ore in any given description of land had been adopted by the state. The attempts of local assessors to value iron ore properties on the hit or miss plan often resulted in grave inequalities and were generally unsatisfactory to both mine owners and the state. The commission early realized the necessity of devising some system of measuring values that would be fair to the state and the owners of mineral properties and at the same time be so scientifically correct in principle as to admit of little dispute.

The following extracts from the biennial report of the tax commission for 1908 outline the work of the commission in classifying mineral properties and in determining rates of valuaton for assessment purposes:

"The problem of taxing the iron ore properties having come before the tax commission, two questions required early consideration—one, how to ascertain the value of such properties; and the other, what basis of valuation would be accepted as a means of getting at the value. Upon the method of procedure two limitations were placed—one of the constitution and the law, in which the principles of the general property tax had been laid down; and the other, the nature and character of the industry itself.

"Many opinions existed among mining men, state officers, members of the legislature, and the public generally, as to the value of ore in the ground. The values were stated to be for ore in the ground from five cents to one dollar per ton. Even mining men themselves placed the values for taxing purposes at amounts varying from two cents to thirty cents per ton. There was therefore little in the form of definite information to be had regarding the basis of taxation of iron ore properties.

"The method of making the assessment of properties and the ranges was the outcome of experience. The attempts of assessors to value iron ore properties were accompanied by complaints of inequalities among mine owners that finally created a sort of de facto board of equalization, which determined the value of the different operating mines according to output. This system, while unsatisfactory from the point of view of equalization of values, was accepted by the mining men as more satisfactory than the valuation made under the assessing machinery of the local governments. Every two years the mining representatives met at Duluth and distributed the real property assessment over the operating mines according to their output. The small mines were the losers and the larger and more valuable mines the gainers by this method of valuation. Prior to 1897, the tax levied upon the mines of the state was at the rate of one cent per ton of output. This law was repealed and the tax determined by the assessed value of the mining property. The commissio

therefore had no criterion by which to determine the values. Prior to 1897, the tonnage tax, after that date the valuations, continually shifted with the growth of the properties, and the distribution to mines according to output prevented the establishment of any principle of local assessment.

* * * * * * * * * * *

"The problem before the tax commission was how to assess these properties, vast in extent and great in value. The first step was to secure information. Consultation with state officers, the collection of books, pamphlets, maps and newspaper clippings upon the iron properties, the securing of state documents, and the reports of committees, were the first steps toward getting information. After careful consideration of the situation and the problems involved, the commission sent, under date of June 18th, a list of questions to the various companies engaged in the business of iron mining in the state of Minnesota. These questions were so framed as to cover every important phase of the mining industry, and the hope and expectation was, to secure a large amount of information regarding the cost of operating, output, nature and character of ores, method of mining, and nature of ownership.

* * * * * * * * * * *

"After a great deal of correspondence, the commission received late in August returns from practically every mining company engaged in operation and from individuals owning iron properties. This data was supplemented by information gathered by the commission during its visit to the range in the first half of August. Through this visit the commission became familiar with types and locations of mines, character of ore, and general conditions existing in the mining business.

"Meantime the questions of classification, analysis, and value of these properties were being considered carefully by the commission. The differences existing between mines in their geological conditons, dfficulty of mining, character of the ore, and the nature of mining rights made it impossible to consider all mineral properties as belonging to the same group. For the purpose of making some distinction between

the different mines and prospects, five grades of operating mines were created, and four grades of prospects. These grades were determined by facts secured through the data furnished by the mining companies and the observations of the commission. The first grade of operating mines included those that were operated at a low cost per ton and were putting out good grades of ore. A distinction was made between the mines in the first grade in that practically no mines approached the Mahoning and Hull-Rust in ease of operation and character of ore. Somewhat more expensively operated mines, though distinctly above the second grade, were placed in the 1-b class. There were mines like the Biwabik, Mountain Iron, Burt-Pool and Morris. The remaining grades of operating mines were determined by the cost of operation, returns and grades of ore. The prospect group was divided into four classes, depending upon the state of their advancement toward an operating mine; thus the first class of prospects were properties on the verge of mining operations. Good examples of this class are to be found in the instances of the Gilbert, Canesteo, Frantz, Iroquois, and certain parts of the Hull-Rust and Mahoning properties. The second class prospects were those properties that had not been advanced so far on the road to operating mines, but upon which drilling and testing had demonstrated the presence of ore in paying quantities. The third class consisted of forties in the neighborhood of good tonnage properties. In the fourth class the ore land acreage was placed, since it had a more or less speculative value.

"The last of August the commission sent notice to the owners of iron ore properties calling upon them to appear on September 5th at 10 a. m. in the rooms of the tax commission at the Capitol in St. Paul and show cause why the valuations of the mining properties should not be materially increased. At the meeting, which was attended by representatives of practically all mine owners and operators, the commission presented its scheme of classification and a tentative list of valuations. Frank discussion and criticism followed, bringing out many valuable suggestions and much new information. The hearing was continued over to the following

Monday, when the commission presented the final classification, rates and valuation of the iron ore properties.

"The factors taken under consideration in the valuation of mining properties are as follows:

1. Geological conditions.
2. Difficulty of mining.
3. Character of the ore.
4. Character of mining rights.

"Mining properties are divided into two grand groups—operating mines and prospects.

"For the purpose of determining the valuation of operating mines, they are classed under five groups, as follows:

Class 1. (a) Properties where mining is comparatively inexpensive and the ore high grade.
(b) Properties where mining is comparatively inexpensive and the ore of lower grade.

Class 2. Properties where mining is somewhat more difficult and mining cost greater than in the case of Class 1, and the ore of mixed grade.

Class 3. Underground properties where the expense of mining is comparatively low for that kind of mining and the ore of high grade.

Class 4. Underground or milling pit properties of distinctly second grade, determined by a higher cost of mining and lower grade of ore than in the case of Class 3.

Class 5. Mines of inferior character where expenses of operation are high.

"Prospects are classed under four groups, as follows:

Class 1. Lands that have been drilled and test-pitted, and where stripping of the overburden has been carried on. In other words, where the property is about to become a mine.

Class 2. Lands that have been drilled and test-pitted, and ore found in some abundance.

Class 3. Unexplored lands near good mining properties.

Class 4. Lands that have not been explored, but are in the well-known ore belt.

"RATES OF VALUATION—PER TON IN THE GROUND."

| | Class 1 | Class 2 | Class 3 | Class 4 | Class 5 |
|---|---|---|---|---|---|
| Operating Mines ... | (a) 33c | 27c | 23c | 19c | 14c |
| | (b) 30c | | | | |
| Prospects ..... | 15c | 10c | 8c | $3 to $50 per acre | |

"In the determination of the rates, the commission was confronted by a number of serious problems—how to get a taxable valuation of iron properties that would be fair to the state and to the owners of the properties. The rates arrived at were in the main determined by several factors:

1st. The difference between the cost of mining and the average price of ore during the last three years.

2nd. By the present worth of the difference for a period of twenty years on a basis of four per cent rate of interest.

3rd. By the percentage of the assessed valuation of real property in the state to the full value of such property.

"The fact that the differences in mining cost vary greatly with the different properties, due to management, condition of the mine, presence of water, depth of ore, character of equipment, grades and location of ores, required the creating of more than one class of mining properties. The classes referred to in the memorandum above were created and the rates established for them were determined as far as possible by the differences between mines in cost of operation, difficulty of mining, and grade of ore. This method of valuation left much to be desired, but no better one was suggested at the hearing of mine owners, and it was the best that the commission could do under the ad valorem requirements of the law."

SUMMARY OF RESULTS—

Having decided upon classification and rates, the commission proceeded to list and classify the 2,116 different mines, mineral properties and prospects. The reports submitted by the mining companies and owners of iron properties in St. Louis and Itasca counties gave a total tonnage of 1,191,

969,757 tons. The commission assessed the tonnage properties at $186,720,026, and acreage prospects and miscellaneous iron lands at $4,986,656, making a total assessment for 1907 of $191,706,682, distributed among the different classes of mines and prospects as follows:

SUMMARY OF TONNAGES AND VALUATIONS BY CLASSES, 1907.

| | Class | Tonnage | Rate | Valuation |
|---|---|---|---|---|
| Mines | 1 | 43,185,685 | 33 | $14,251,276 |
| | 1-b | 66,442,923 | 30 | 19,932,876 |
| | 2 | 25,176,067 | 27 | 6,797,538 |
| | 3 | 138,845,839 | 23 | 32,134,497 |
| | 4 | 91,494,762 | 19 | 17,653,975 |
| | 5 | 105,821,134 | 14 | 14,561,749 |
| Prospects | 1 | 271,863,523 | 15 | 40,779,516 |
| | 2 | 204,635,249 | 10 | 20,483,518 |
| | 3 | 244,504,575 | 8 | 19,490,345 |
| Unclassed mines | .. | ..... | .. | 634,736 |
| Acreage prospects | .. | ..... | .. | 998,000 |
| Other iron lands | .. | ..... | .. | 2,257,700 |
| Total | | 1,191,969,757 | | $189,975,726 |
| Other lands in iron belt | | | | 1,730,956 |
| Total assessment | | | | $191,706,682 |

The total assessment for 1907 was distributed as follows:

| | |
|---|---|
| St. Louis County | $177,699,562 |
| Itasca county | 14,007,120 |
| | $191,706,682 |

SUMMARY OF 1908 ASSESSMENT:

The 1908 assessment of mineral properties was based upon tonnage estimates hastily prepared by the mining companies to meet the immediate needs of the situation. In addition, the tax commission had a very limited time in which to classify the different mines and mineral properties. Some

errors were made in both tonnage estimates and classification which were corrected in the 1908 assessment. While the reclassification resulted in a tonnage increase of 1,219,202 tons, there was a net decrease of $11,495,989 in the assessed value of mineral properties as compared with 1907, the total assessment for 1908 being $180,210,693. This amount was distributed among the different classes of mines and prospects as follows:

Summary of Tonnages and Valuations by Classes, 1908

| | Class. | Tonnage. | Rate. | Valuation |
|---|---|---|---|---|
| Mines | 1 | 35,245,360 | 33 | $11,630,96 |
| | 1-b | 59,450,318 | 30 | 17,835,09 |
| | 2 | 32,837,331 | 27 | 8,866,07 |
| | 3 | 99,173,967 | 23 | 22,810,01 |
| | 4 | 53,708,162 | 19 | 10,204,55 |
| | 5 | 90,519,746 | 14 | 12,672,76 |
| Prospects | 1 | 279,980,702 | 15 | 41,997,10 |
| | 2 | 243,760,744 | 10 | 24,376,06 |
| | 3 | 298,512,629 | 8 | 23,880,99 |
| Acreage Prospects | | | | 2,004,50 |
| Total | | 1,193,188,959 | | $176,278,13 |
| Other lands in iron belt | | | | 3,932,56 |
| Total assessment | | | | $180,210,69 |

The total assessment for 1908 was distributed as follows

| | |
|---|---|
| St. Louis county | $164,381,47 |
| Itasca county | 15,829,21 |
| | $180,210,69 |

THE ASSESSMENT OF 1909.

In 1909 a rearrangement of classes was made, the various mineral properties being classified as active mines, reserves and sub-reserves. The new classes and rates were as follows:

| | Active Mines Cents. | Reserves Cents. | Sub-Reserves Cents. |
|---|---|---|---|
| Class 1 . . . . . | 33 | 21 | 15 |
| Class 2 . . . . . | 30 | 18 | 10 |
| Class 3 . . . . . | 27 | 15 | . . |
| Class 4 . . . . . | 23 | 11 | . . |
| Class 5 . . . . . | 19 | 10 | . . |
| Class 6 . . . . . | 14 | 8 | . . |

The only change made in the active mines in the new classification was in the class number, 1-b being eliminated, and the classes numbered from 1 to 6 consecutively. Considerable change, however, was made in the reserve classes, five new classes being added and a substantial increase in rates made in two other classes. It was felt that certain reserves adjacent to active mines and shortly to become shipping mines should take a higher rate than the one first imposed by the commission. Sub-reserves are a secondary class of reserves somewhat more remote from certain classes of active mines than reserves.

A number of prospects now called reserves became active mines during 1908 and were reclassified in 1909 taking the higher rate imposed on shipping mines. New tonnages were added and a number of new properties were placed in the reserve or prospect class and assessed accordingly. Of the total tonnage increase of 117,001,235 tons over 1908, 12,522,887 tons were added as the result of the work of the school of mines in verifying estimates, the balance coming from corrected reports, additional explorations and new discoveries. The total assessed values of tonnages, reserves and other lands in the iron belt amounted to $204,526,139, being an increase of $24,315,446 over 1908.

A detailed statement showing tonnages and valuations by classes and by assessment districts follows:

SUMMARY OF TONNAGES AND VALUATION BY CLASSES, 1909

| | Class. | Tonnage. | Rate. | Valuation. |
|---|---|---|---|---|
| Mines | 1 | 35,800,413 | 33 | $11,814,136 |
| | 2 | 60,728,440 | 30 | 18,218,530 |
| | 3 | 34,728,645 | 27 | 9,376,734 |
| | 4 | 114,027,524 | 23 | 26,226,329 |
| | 5 | 52,824,411 | 19 | 10,036,637 |
| | 6 | 105,893,662 | 14 | 14,825,107 |
| Reserves and Sub-Reserves | 1 | 147,980,020 | 21 | 31,075,803 |
| | 2 | 188,898 | 18 | 34,001 |
| | 3 | 156,624,294 | 15 | 23,493,641 |
| | 4 | 36,782,952 | 11 | 4,046,124 |
| | 5 | 234,646,425 | 10 | 23,464,639 |
| | 6 | 329,964,510 | 8 | 26,397,157 |
| Acreage prospects | | | | 1,584,740 |
| Total | | 1,310,190,194 | | $200,593,578 |
| Other lands in iron belt | | | | 3,932,561 |
| Total assessment | | | | $204,526,139 |

The total assessment for 1909 was distributed as follows:

| | |
|---|---|
| St. Louis county | $187,193,557 |
| Itasca county | 17,332,582 |
| | $204,526,139 |

THE 1910 ASSESSMENT.

Changes were made in the classification of a number of mineral properties in 1910. Several reserves had become shipping mines during 1909 and were re-classed and assessed as active mines in 1910. New tonnages, developed by explorations and through the work of the school of mines, were added to the assessment rolls. The total increase in tonnage amounted to 66,690,593 tons, from which 29,284,496 tons were deducted for shipments during the year, making a net tonnage increase over 1909 of 37,406,907 tons.

NEW RATES, 1910.

After the work of re-classification had been completed and new tonnages and reserves had been added to the assessment rolls, the commission made a general raise of five (5) per cent on all mines, reserves and other lands in the ore belt. Under this increase the rates used for determining the taxable value of iron ore in the ground in 1910 were as follows:

| | Active Mines | Reserves | Sub-Reserves |
|---|---|---|---|
| | Cents. | Cents. | Cents. |
| Class 1 . . . . . | 34.65 | 22.05 | 15.75 |
| Class 2 . . . . . | 31.50 | 18.90 | 10.50 |
| Class 3 . . . . . | 28.35 | 15.75 | . . . . . |
| Class 4 . . . . . | 24.15 | 11.55 | . . . . . |
| Class 5 . . . . . | 19.95 | 10.50 | . . . . . |
| Class 6 . . . . . | 14.70 | 8.40 | . . . . . |

The total assessed values of mines, reserves and other lands in the ore belt under the new rates adopted in 1910 amounted to $224,669,845, being a net increase of $20,143,706 over 1909, and a total increase of $44,459,152, or 24.7 per cent over 1908.

A detailed statement showing tonnages and valuations by classes and by assessment districts follows:

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SUMMARY OF TONNAGES AND VALUATIONS BY CLASSES, 1910.

| | Class | Tonnage | Rate* | Valuation |
|---|---|---|---|---|
| Mines | 1 | 50,008,286 | 34.65 | $17,327,870 |
| | 2 | 57,102,156 | 31.50 | 17,987,177 |
| | 3 | 39,616,084 | 28.35 | 11,231,161 |
| | 4 | 161,627,670 | 24.15 | 39,033,078 |
| | 5 | 52,656,242 | 19.95 | 10,504,921 |
| | 6 | 114,464,801 | 14.70 | 16,826,328 |
| Reserves and Sub-Reserves | 1 | 129,056,232 | 22.05 | 28,456,899 |
| | 2 | 188,898 | 18.90 | 35,702 |
| | 3 | 144,242,484 | 15.75 | 22,718,190 |
| | 4 | 2,963,833 | 11.55 | 342,322 |
| | 5 | 282,659,533 | 10.50 | 29,670,251 |
| | 6 | 313,010,072 | 8.40 | 26,289,139 |
| Acreage prospects | | | | 843,270 |
| Total | | 1,347,596,291 | | $221,266,308 |
| Other lands in iron belt | | | | 3,403,537 |
| Total assessment | | | | $224,669,845 |

The total assessment for 1910 was distributed as follows:

| | |
|---|---|
| St. Louis county | $206,869,908 |
| Itasca county | 17,799,937 |
| | $224,669,845 |

*Five (5) per cent increase over 1909 in all classes.

The following is comparative summary of tonnages and tonnage valuations together with the assessed valuation of other lands in the iron ore belt and the total assessed values for the years 1906 to 1910 inclusive:

COMPARATIVE SUMMARY OF TONNAGES AND VALUATIONS, 1906-1910.

| Year | Total Tonnages | Valuation Tonnage | Valuation Other Lands | Total Valuation |
|---|---|---|---|---|
| *1906 | ..... | ..... | ..... | $ 64,486,40 |
| 1907 | 1,191,969,757 | $186,085,290 | $5,621,392 | 191,706,68 |
| 1908 | 1,193,188,959 | 174,263,632 | 5,947,061 | 180,210,69 |
| 1909 | 1,310,190,194 | 199,008,838 | 5,517,301 | 204,526,13 |
| 1910 | 1,347,596,291 | 220,423,038 | 4,246,807 | 224,669,84 |

AVERAGE ASSESSED VALUE PER TON

The following table shows the tonnage and valuation of mines and reserves separately, and the average assessed value per ton for the years 1907, 1908, 1909 and 1910.

AVERAGE ASSESSED VALUE PER TON OF MINES AND RESERVES, 1907-1910.

MINES.

| Year | Tonnage | Valuation | Average Per Ton |
|---|---|---|---|
| 1907 | 470,966,410 | $105,331,911 | 22.4 |
| 1908 | 370,934,884 | 84,019,472 | 22.9 |
| 1909 | 404,003,095 | 90,497,473 | 22.4 |
| 1910 | 475,475,239 | 112,910,535 | 23.8 |

RESERVES.

| Year | Tonnage | Valuation | Average Per Ton |
|---|---|---|---|
| 1907 | 721,003,347 | $80,753,379 | 11.2 |
| 1908 | 822,254,075 | 90,254,160 | 11. |
| 1909 | 906,187,099 | 108,511,365 | 11.9 |
| 1910 | 872,121,052 | 107,512,503 | 12.3 |

* No tonnage estimates.

The foregoing summaries of assessed values do not include the assessed value of stock piles or the other personal property assessment of the various mining companies and mine operators which amounts approximately to $4,500,000 annually.

ORE SHIPMENTS

The following table gives the ore shipments from St. Louis and Itasca counties for the past five years:

| | |
|---|---|
| 1906 | 25,611,384 tons |
| 1907 | 29,180,975 tons |
| 1908 | 18,098,894 tons |
| 1909 | 29,284,496 tons |
| 1910 | 30,308,583 tons |

STATE MINERAL LEASES

Under chapter 14, Laws of 1907, the provisions of law relating to the issuing of permits to explore state lands for minerals were repealed.

No mineral leases have been issued since February 13, 1908. Up to that date a total of 872 mineral leases had been issued by the state of which number 276* were still in force when the last assessment was made, May 1, 1910. Of this number tonnages have been developed on only 49 leases. The total payments received by the state from mineral leases and contracts, and royalty on iron ore to August 1, 1910, amounted to $1,902,780.12.

The following table shows the number of state mineral leases upon which tonnages have been actually developed on the different classes of state lands, the estimated tonnage and the assessed value of the same.

* 42 of these were cancelled November 1, 1910.

TONNAGE AND ASSESSED VALUE OF 49 STATE MINERAL LEASES, 1910.

| | No. of Leases | Tonnage | Assessed Value |
|---|---|---|---|
| School lands | 34 | 105,294,969 | $13,460,23 |
| University lands | 7 | 8,844,871 | 857,56 |
| Swamp lands | 8 | 31,059,977 | 2,717,56 |
| Totals | 49 | 145,199,817 | $17,035,31 |

CONCLUSION

Since the organization of the tax commission in 1907, the assessed value of mineral lands has increased from $64,486,409 to $224,669,845, a gain of $160,183,436, or 248 per cent in four years. In 1906 the assessed value of mineral properties represented 8.5 per cent of the total real estate assessment of the entire state, while in 1910 it had increased to 22.2 per cent of the total. This large increase is due in part to the opening up of new mines and to the development of new tonnages by explorations, and in part to the comprehensive method inaugurated and followed by the commission of ascertaining and verifying tonnages and values for purposes of taxation.

It has been the policy of the commission to keep in close touch at all times with development work on the iron ranges. We are thus enabled to keep fully informed of new discoveries and new tonnages, of changes from reserves to active mines, and of many other matters of importance affecting mineral values. Our records contain complete data of each forty-acre tract of land in the iron ore belt, and when drilled or test-pitted, show grades, tonnages, classification and assessed values. Mining companies and owners of mineral properties that have been explored readily respond to our requests for information relating to their properties and in nearly every case furnish us with blue prints showing explorations and analyses of ore samples, for which courtesy we here desire to make due acknowledgment.

We believe that the commission has the mining situation well in hand and that the method adopted of classifying and

valuing the various mineral properties and of verifying tonnage estimates and grades enables us to determine values with a reasonable degree of accuracy and to equitably assess the great iron ore deposits of the state as rapidly as explorations furnish us with the necessary data.

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January 29, 1913

~~Sheet 8.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1901

| Grades--1901 | Production—Gross Tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 5,925,853 | 3,670,940 | 9,596,793 | 61.7 | 38.3 |
| Basic..... | 584,353 | 864,497 | 1,448,850 | 40.3 | 59.7 |
| Total Bess. and Basic..... | 6,510,206 | 4,535,437 | 11,045,643 | 58.9 | 41.1 |
| Forge..... | none | 639.454 | 639,454 | 00.0 | 100.0 |
| Foundry and Ferro-silicon..... | 97,290 | 3,451,428 | 3,548,718 | 2.7 | 97.3 |
| Spiegeleisen..... | 132,940 | 98,882 | 231,822 | 57.3 | 42.7 |
| Ferro-manganese..... | * 57,590 | 2,049 | 59,639 | 96.6 | 3.4 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 57,705 | 295,373 | 353,078 | 16.3 | 83.7 |
| Total..... | 6,855,731 | 9,022,623 | 15,878,354 | 43.2 | 56.8 |

~~* See note on page 1 concerning the manufacture of ferro-manganese in this country.~~

Government Exhibit (Gray) No. 346
January 29, 1913

~~Sheet 3.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1902

| Grades--1902 | Production—Gross tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 6,784,887 | 3,608,281 | 10,393,168 | 65.3 | 34.7 |
| Basic..... | 948,837 | 1,089,753 | 2,038,590 | 46.5 | 53.5 |
| Total Bess. and Basic..... | 7,733,724 | 4,698,034 | 12,431,758 | 62.2 | 37.8 |
| Forge..... | None | 833,093 | 833,093 | 00.0 | 100.0 |
| Foundry and Ferro-silicon..... | 34,281 | 3,816,995 | 3,851,276 | .9 | 99.1 |
| Spiegeleisen..... | 128,265 | 40,143 | 168,408 | 76.2 | 23.8 |
| Ferro-manganese..... | *44,453 | 73 | 44,526 | 99.8 | .2 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 34,807 | 457,439 | 492,246 | 7.1 | 92.9 |
| Total..... | 7,975,530 | 9,845,777 | 17,821,307 | 44.8 | 55.2 |

~~* See note on Page 1 concerning the manufacture of Ferro-manganese in this county.~~

Government Exhibit (Gray) No. 347
January 29, 1913

~~Sheet 4.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1903

| Grades--1903 | Production--Gross tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 6,188,495 | 3,801,413 | 9,989,908 | 61.9 | 38.1 |
| Basic..... | 898,097 | 1,142,629 | 2,040,726 | 44.0 | 56.0 |
| Total Bess. and Basic..... | 7,086,592 | 4,944,042 | 12,030,634 | 58.9 | 41.1 |
| Forge..... | None | 783,016 | 783,016 | 00.0 | 100.0 |
| Foundry and Ferro-silicon..... | 14,087 | 4,394,936 | 4,409,023 | .3 | 99.7 |
| Spiegeleisen..... | 121,779 | 34,921 | 156,700 | 77.7 | 22.3 |
| Ferro-manganese..... | *34,409 | 1,552 | 35,961 | 95.7 | 4.3 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 22,374 | 571,544 | 593,918 | 3.8 | 96.2 |
| Total..... | 7,279,241 | 10,730,011 | 18,009,252 | 40.4 | 59.6 |

~~*See note on page 1 concerning the manufacture of ferro-manganese in this country~~

Government Exhibit (Gray) No. 348
January 29, 1913

~~Sheet 5.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1904

| Grades--1904 | Production--Gross tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phosphorus..... | 5,759,205 | 3,339,454 | 9,098,659 | 63.3 | 36.7 |
| Basic..... | 1,403,088 | 1,080,016 | 2,483,104 | 56.5 | 43.5 |
| Total Bess. and Basic..... | 7,162,293 | 4,419,470 | 11,581,763 | 61.8 | 38.2 |
| Forge..... | None | 550,836 | 550,836 | 00.0 | 100.0 |
| Foundry and Ferro-silicon..... | 22,037 | 3,805,192 | 3,827,229 | .6 | 99.4 |
| Spiegeleisen..... | 100,025 | 62,345 | 162,370 | 61.6 | 38.4 |
| Ferro-manganese..... | * 55,459 | 1,617 | 57,076 | 97.2 | 2.8 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 29,607 | 288,152 | 317,759 | 9.3 | 90.7 |
| Total..... | 7,369,421 | 9,127,612 | 16,497,033 | 44.7 | 55.3 |

~~* See note on Page 1 concerning the manufacture of ferro-manganese in this country.~~

Government Exhibit (Gray) No. 349
January 29, 1913

~~Sheet 6.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1905

| Grades--1905 | Production--Gross tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 7,650,977 | 4,756,139 | 12,407,116 | 61.7 | 38.3 |
| Basic..... | 2,250,936 | 1,854,243 | 4,105,179 | 54.8 | 45.2 |
| Total Bess. and Basic..... | 9,901,913 | 6,610,382 | 16,512,295 | 60.0 | 40.0 |
| Forge..... | None | 727,817 | 727,817 | 00.0 | 100.0 |
| Foundry and Ferro-silicon..... | 22,511 | 4,735,527 | 4,758,038 | .5 | 99.5 |
| Spiegeleisen..... | 158,071 | 69,726 | 227,797 | 69.4 | 30.6 |
| Ferro-manganese..... | * 62,186 | None | 62,186 | 100.0 | 00.0 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 27,467 | 676,780 | 704,247 | 3.9 | 96.1 |
| Total..... | 10,172,148 | 12,820,232 | 22,992,380 | 44.2 | 55.8 |

~~* See note on Page 1 concerning the manufacture of Ferro-manganese in this country.~~

~~Sheet 7.~~

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Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1906

| Grades--1906 | Production--Gross Tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 8,551,943 | 5,288,575 | 13,840,518 | 61.8 | 38.2 |
| Basic..... | 2,489,643 | 2,529,031 | 5,018,674 | 49.6 | 50.4 |
| Total Bess. and Basic..... | 11,041,586 | 7,817,606 | 18,859,192 | 58.5 | 41.5 |
| Forge..... | None | 597,420 | 597,420 | 00.0 | 100.0 |
| Foundry and Ferro-silicon..... | 3,269 | 4,769,742 | 4,773,011 | .1 | 99.9 |
| Spiegeleisen..... | 150,044 | 94,936 | 244,980 | 61.2 | 38.8 |
| Ferro-manganese..... | * 55,520 | None | 55,520 | 100.0 | .0 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 16,958 | 760,110 | 777,068 | 2.2 | 97.8 |
| Total..... | 11,267,377 | 14,039,814 | 25,307,191 | 44.5 | 55.5 |

~~* See Note on Page 1 concerning the manufacture of Ferro-manganese in this country.~~

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January 29, 1913

~~Sheet 8~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1907

| Grades--1907 | Production--Gross Tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 7,919,223 | 5,312,397 | 13,231,620 | 59.9 | 40.1 |
| Basic..... | 3,113,379 | 2,261,840 | 5,375,219 | 57.9 | 42.1 |
| Total Bess. and Basic..... | 11,032,602 | 7,574,237 | 18,606,839 | 59.3 | 40.7 |
| Forge..... | 5,332 | 677,835 | 683,167 | .8 | 99.2 |
| Foundry and Ferro-silicon..... | 184,802 | 4,966,407 | 5,151,209 | 3.6 | 96.4 |
| Spiegeleisen..... | 130,554 | 152,876 | 283,430 | 46.1 | 53.9 |
| Ferro-manganese..... | * 55,918 | None | 55,918 | 100.0 | 00.0 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 13,587 | 987,211 | 1,000,798 | 1.4 | 98.6 |
| Total..... | 11,422,795 | 14,358,566 | 25,781,361 | 44.3 | 55.7 |

~~*See note on page 1 concerning the manufacture of Ferro-manganese in this country.~~

For 1907 and all subsequent years the Steel Corporation figures include the production of pig iron by the Tennessee Coal, Iron and Railroad Company.

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January 29, 1913

~~Sheet 31~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1908

| Grades--1908 | Production--Gross Tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 4,423,347 | 2,793,629 | 7,216,976 | 61.3 | 38.7 |
| Basic..... | 2,270,760 | 1,739,384 | 4,010,144 | 56.6 | 43.4 |
| Total Bess. and Basic..... | 6,694,107 | 4,533,013 | 11,227,120 | 59.6 | 40.4 |
| Forgs..... | 2,507 | 454,657 | 457,164 | .5 | 99.5 |
| Foundry and Ferro-silicon..... | 117,485 | 3,520,137 | 3,637,622 | 3.2 | 96.8 |
| Spiegeleisen..... | 74,716 | 36,660 | 111,376 | 67.1 | 32.9 |
| Ferro-manganese..... | *40,628 | 14 | 40,642 | 100.0 | 00.0 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 4,965 | 457,129 | 462,094 | 1.1 | 98.9 |
| Total..... | 6,934,408 | 9,001,610 | 15,936,018 | 43.5 | 56.5 |

* See note on Page 1 concerning the manufacture of Ferro-manganese in this country.

The production of pig iron by the Tennessee Coal, Iron and Railroad Company is included above.

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January 29, 1913

~~Sheet 10.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1909 *

| Grades--1909 | Production--Gross Tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 6,451,386 | 4,105,984 | 10,557,370 | 61.1 | 38.9 |
| Basic..... | 4,697,103 | 3,553,122 | 8,250,225 | 56.9 | 43.1 |
| Total Bess. and Basic..... | 11,148,489 | 7,659,106 | 18,807,595 | 59.3 | 40.7 |
| Forge..... | 10,062 | 715,562 | 725,624 | 1.4 | 98.6 |
| Foundry and Ferro-silicon..... | 275,771 | 5,046,644 | 5,322,415 | 5.2 | 94.8 |
| Spiegeleisen..... | 80,942 | 61,889 | 142,831 | 56.7 | 43.3 |
| Ferro-manganese..... | ** 82,208 | 1 | 82,209 | 100.0 | 00.0 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 20,878 | 693,919 | 714,797 | 2.9 | 97.1 |
| Total..... | 11,618,350 | 14,177,121 | 25,795,471 | 45.0 | 55.0 |

* Includes the production of the Tennessee Coal, Iron and Railroad Company.

** Reported to American Iron and Steel Association as 82,209 and subsequently changed to 82,208.

~~See note on page 1 concerning the manufacture of ferro-manganese in this country.~~

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January 29, 1913

~~Sheet 11.~~

Production of all kinds of pig iron in the United States by grades by the United States Steel Corporation and the independent companies in the calendar year 1910 *

| Grades--1910 | Production--Gross Tons | | | Percentages | |
|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents |
| Bess. & Low Phos..... | 6,290,235 | 4,955,407 | 11,245,642 | 55.9 | 44.1 |
| Basic..... | 5,124,272 | 3,960,336 | 9,084,608 | 56.4 | 43.6 |
| Total Bess. and Basic..... | 11,414,507 | 8,915,743 | 20,330,250 | 56.1 | 43.9 |
| Forge..... | 6,940 | 557,217 | 564,157 | 1.2 | 98.8 |
| Foundry and Ferro-silicon..... | 207,499 | 5,052,948 | 5,260,447 | 3.9 | 96.1 |
| Spiegeleisen..... | 102,260 | 50,795 | 153,055 | 66.8 | 33.2 |
| Ferro-manganese..... | ** 71,376 | None | 71,376 | 100.0 | 00.0 |
| Malleable Bessemer, White and Mottled, Direct Castings, etc. | 28,816 | 895,466 | 924,282 | 3.1 | 96.9 |
| Total..... | 11,831.398 | 15,472,169 | 27,303,567 | 43.3 | 56.7 |

* Includes the production of the Tennessee Coal, Iron and Railroad Company

** ~~See note on page 1 concerning the manufacture of ferro-manganese in this country.~~

Government Exhibit (Gray) No. 355
January 29, 1913

COMPARATIVE PRODUCTION OF STEEL INGOTS AND CASTINGS BY THE UNITED STATES STEEL CORPORATION AND THE INDEPENDENT COMPANIES IN 1909 AND 1910

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Compiled by the Bureau of Statistics of the American Iron and Steel Association, 261 South Fourth Street, Philadelphia

| | 1909—Gross Tons | | | 1910—Gross Tons | | |
|---|---|---|---|---|---|---|
| | Corporation | Independents | Total | Corporation | Independents | Total |
| Bess. & O. H..... | 13,343,145 | 10,481,574 | 23,824,719 | 14,130,776 | 11,786,505 | 25,917,281 |
| Crucible..... | 0 | 107,355 | 107,355 | 0 | 122,303 | 122,303 |
| Electric..... | 12,044 | 1,718 | 13,762 | 48,593 | 3,548 | 52,141 |
| All other..... | 0 | 9,185 | 9,185 | 0 | 3,194 | 3,194 |
| Total..... | 13,355,189 | 10,599,832 | 23,955,021 | 14,179,369 | 11,915,550 | 26,094,919 |

ELECTRIC STEEL

So-called electric steel is nothing more or less than open-hearth steel produced in an open-hearth furnace, electricity being used as a heating agent instead of gas or oil. The United States Steel Corporation in its reports to the American Iron and Steel Association has always reported so-called electric steel as open-hearth steel. It also so classifies this steel in its own annual reports. It was only after the Association requested it to do so that the Corporation separated the so-called electric steel in its reports to the Association.

Note.--The production of the Tennessee Coal, Iron and Railroad Company is not in the production of the independent companies for the year 1907.

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COMPARATIVE PRODUCTION OF ALL KINDS OF FINISHED ROLLED IRON AND STEEL BY THE SUB

PANIES OF THE UNITED STATES STEEL CORPORATION AND BY THE INDEPENDENT COMPANIE

| Products | 1907--GROSS TONS | | | |
|---|---|---|---|---|
| | Production | | | Perce |
| | Corporation | Independents | Total | Corporation |
| Bessemer Steel Rails..... | 1,744,578 | 1,635,447 | 3,380,025 | 51.61 |
| Open Hearth S. Rails..... | 1,258 | 251,446 | 252,704 | 00.50 |
| Iron Rails..... | 0 | 925 | 925 | 0 |
| Structural Shapes..... | 1,066,727 | 873,625 | 1,940,352 | 54.98 |
| Plates--No.12 Gauge and thicker | 1,410,555 | 1,249,505 | 2,660,060 | 53.03 |
| Sheets--No.13 Gauge and thinner | 961,943 | 626,829 | 1,588,772 | 60.55 |
| Black Plates for tinning, included with Plates and Sheets..... | 367,008 | Includedwith 137,064 | Plates and 504,072 | Sheets 72.81 |
| Wire Rods..... | 1,443,191 | 574,392 | 2,017,583 | 71.53 |
| Nail Plate..... | 0 | 52,027 | 52,027 | 00.00 |
| Miscellaneous Rolled Products, including | | | | |
| 1--Merchant Bars..... | 802,791 | 3,168,197 | 3,970,988 | 20.22 |
| 2--Skelp..... | 918,537 | 884,090 | 1,802,627 | 50.96 |
| 3--Hoops, Bands and Cotton Ties | 472,333 | 202,014 | 674,347 | 70.04 |
| 4--Splice Bars..... | 93,908 | 99,315 | 193,223 | 48.60 |
| 5--Rolled Forging Blooms and Rolled Forging Billets.... | 99,567 | 138,215 | 237,782 | 43.71 |
| 6--Concrete Bars, Sheet Piling, Railroad Ties, Spike and Chain Rods, Bolt and Nut Rods, Horseshoe Bars, Strips, and other Misc. Rolled Products..... | 425,643 | 677,759 | 1,103,407 | 38.58 |
| Total..... | 9,441,036 | 10,433,786 | 19,864,822 | |

## Government Exhibit No. 359.

(January 30, 1913.)

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AN AGREEMENT made and entered into at the City of New York on the fifth day of January, A. D. one thousand eight hundred and ninety-nine, by and between JOHN W. GATES and ISAAC L. ELLWOOD, of the City of Chicago, parties of the first part, and FREDERICK P. VOORHEES, of the City of New York, party of the second part.

WHEREAS the party of the second part has agreed with the parties of the first part by an agreement bearing even date herewith that, in the event of the deposit of a majority of the capital stock of the American Steel and Wire Company as therein provided, he will cause a new corporation, under the corporate title of "The American Steel and Wire Company of New Jersey," or other suitable name, to be organized under the laws of the State of New Jersey, with a capital stock of $90,000,000, divided into $40,000,000 par value of seven per cent. cumulative preferred stock and $50,000,000 par value of common stock, which corporation is to acquire at least a majority of the shares of stock of the American Steel and Wire Company of Illinois, and is also to acquire certain other plants, properties and stock; and

WHEREAS the parties of the first part are entitled to purchase under certain existing contracts at least a majority of the outstanding shares of stock of the Washburn & Moen Manufacturing Company, the Worcester Wire Company, the Pittsburg Wire Company and the Cleveland Rolling Mill of Ohio, and also to acquire the plants and properties of the Cincinnati Barb Wire Fence Company, the Shenango Valley Steel Company, the Consolidated Barb Wire Company, the Newburg Wire and Nail Company and Laidlaw Bale Tie Company, and are endeavoring to acquire the properties of or shares of stock in the Oliver & Snyder Steel Company and the Oliver Wire Company and other concerns engaged in a similar business; and

WHEREAS the party of the second part desires to acquire all and singular the aforesaid rights of the parties of the first part; and

WHEREAS, in order to procure the funds necessary to enable him to perform this agreement, the party of the second part has entered into a certain agreement with Messrs. J. & W. Seligman & Co., Syndicate Managers under a Syndicate Agreement dated January 5, 1899:

NOW THIS AGREEMENT WITNESSETH, that the parties hereto, for and in consideration of the premises and of the agreements hereinafter recited and of the sum of ten dollars to each paid by the other, the receipt whereof is hereby acknowledged, have covenanted and agreed and hereby do covenant and agree as follows:

FIRST. The parties of the first part agree to sell assign and transfer to the party of the second part all their right, title and interest in and to nine certain agreements, as follows:

(1) Agreement dated December 10, 1898, between Harriette E. Larmon and H. Bellmer, of the first part, and L. L. Smith, of the second part, for the purchase of the plant of the Cincinnati Barb Wire Fence Company for the sum of $250,000, which has been paid; and conveyance made to the parties hereto of the first part.

(2) Agreement dated December 29, 1898, between the Shenango Valley Steel Company, of the first part, and John W. Gates and John Lambert, of the second part, for the purchase of several plants for the sum of $900,000, payable $750,000 in cash within thirty days, and $150,000 by the assumption of an incumbrance upon said plants; which agreement has been assigned by said John W. Gates and John Lambert to the parties hereto of the first part.

(3) Agreement dated December 24, 1898, between the Consolidated Barb Wire Company, Albert Henley and J. A. Henley, of the first part, and the parties of the first part hereto, of the second part, for the purchase of the property of the said Company for the sum of $287,000 and actual mill cost of merchandise, material, stock and supplies, etc., manufactured or in process of manufacture.

(4) Agreement dated December 28, 1898, between W. A. Laidlaw, of the first part, and A. M. Crane, of the second part, for the purchase of the property of The Laidlaw Bale Tie Company within sixty days for the sum of $60,000; which agreement has been assigned to the parties of the first part.

(5) Agreement dated December 22, 1898, between Thomas Walker, T. W. Fitch and Joseph Kountz, of the first part, and the parties of the first part hereto, of the second part, for the purchase of 2,632 shares of the capital stock of the Pittsburg Wire Company for $658,000, payable by December 27, 1898, and in addition a bonus of $56,240; which sums have been paid.

(6) Agreement (undated) between William Chisholm, S. H. Chisholm and C. B. Beach, of the first part, and the parties of the first part hereto, of the second part, for the purchase of a majority of the capital stock of the Cleveland Rolling Mill Company at $1,250 per share, payable on or before January 18, 1899, with the obligation to take the balance of the stock if tendered to the said parties of the second part within thirty days thereafter.

(7) Agreement dated January 2, 1899, between B. B. Odell, Jr., of the first part, and John W. Gates, of the second part, for the sale of property of the Newburg Wire and Nail Company, for $120,000, payable within four months; which agreement has been assigned by said John W. Gates to the parties hereto of the first part.

(8) Agreement dated January 5, 1899, between W. E. Rice and P. W. Moen, of the first part, and the parties hereto of the first part, of the second part, for the purchase of 20,100 shares of the capital stock of the Washburn & Moen Manufacturing Company, at $200 per share, payable on or before February 1, 1899, with privilege to the Company to declare and pay a dividend of fifteen per cent on its capital stock prior to completion of purchase, and an obligation on the part of the parties of the second part to take the balance of 19,900 shares of said stock on the same terms, if tendered on or before April 1, 1899; on which agreement there has been paid $600,000.

(9) Agreement dated January 5, 1899, between W. E. Rice, of the first part, and the parties hereto of the first part.

of the second part, for the purchase of all the capital stock of the Worcester Wire Company, for $430,000, being $430 per share, to be paid for on or before February 1, 1899; on which agreement there has been paid $30,000.

SECOND: The party of the second part agrees to assume the said agreements and to perform the same and to indemnify and hold harmless the parties of the first part of and from all liability thereunder; and further agrees upon the assignment and transfer of said agreements to pay to the parties of the first part in cash with interest all sums that they may have theretofore paid out or expended on account of the purchase prices mentioned in said agreements.

It is further agreed, however, that the said assignments of the said agreements shall be deposited by the parties hereto with the firm of J. & W. Seligman & Co., as depositary, and shall not be delivered to the party of the second part until he shall have deposited with said firm as such depositary an amount in cash equal to the aggregate amounts payable under the said several agreements, which amount shall be applied by said firm of J. & W. Seligman & Co. to the payments yet to be made as provided for in said agreements.

THIRD: The parties of the first part further agree that if prior to the organization of the said new company they shall procure contracts for the purchase of the properties of or shares of stock in the Oliver & Snyder Steel Company and the Oliver Wire Company, or either of them, or other properties, they will sell, transfer and assign the same to the party of the second part upon his demand and his agreeing to assume and perform the same and to reimburse to the parties of the first part any cash payments on account of the purchase price therein mentioned which they may have made thereunder, and the deposit of the moneys remaining due thereunder, as above provided.

FOURTH: It is expressly agreed, however, that this agreement shall not become operative unless and until at least a majority of the capital stock of the American Steel and Wire Company shall have been deposited under the terms of and as specified in the said agreement bearing even date herewith and executed between the parties hereto.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals at the City of New York the day and year first above written.

In presence of
PAUL E. DE FERE,
40 Wall St.
New York.

JOHN W. GATES (Seal)
ISAAC L. ELLWOOD (Seal)
FREDERICK P. VOORHEES (Seal)

---

**Government Exhibit No. 360.**

(January 30, 1913)

NOTICE TO STOCKHOLDERS

OF THE

AMERICAN STEEL & WIRE COMPANY.

---

NEW YORK, JANUARY 7TH, 1899.

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DEAR SIR:

During several months past the holders of a large portion of the shares of the American Steel and Wire Company have been carefully considering the advisability of obtaining by purchase or reorganization, other leading wire concerns in the United States, among them the Cleveland Rolling Mill Company, of Cleveland, Ohio, manufacturers of pig iron, Bessemer steel and open hearth steel, as well as wire in its various forms, and the Washburn & Moen Manufacturing Company, of Worcester, Mass., and Waukegan, Ill.

It is believed that there would result greater economy in management and operation and thereby be of advantage to all the stockholders of the several companies. After a thorough investigation of the several properties and their

values, actual as well as relative, the acquisition of the following plants has been assured upon a just and fair basis:

Washburn & Moen Manufacturing Company, of Worcester, Mass., and Waukegan, Ill.,

Worcester Wire Company, of Worcester, Mass.,

Cleveland Rolling Mill Company, of Cleveland, Ohio,

Newcastle Wire Nail Company, of Newcastle, Pa.,

Pittsburgh Wire Company, of Pittsburgh, Pa.,

Oliver Wire Company, of Pittsburgh, Pa.

Oliver & Snyder Steel Company, of Pittsburgh, Pa.,

Cincinnati Barbed Wire Fence Company, of Cincinnati, Ohio,

Laidlaw Bale & Tie Company, of Joliet, Ill., and Kansas City, Mo.,

Consolidated Barb Wire Company, of Lawrence, Kas., and Joliet, Ill.,

Newburg Wire & Nail Company, of Newburg, N. Y.

To accomplish the object suggested, the following plan has been agreed upon:

Agreements have been entered into for the organization of a corporation under the laws of the State of New Jersey to be known as the American Steel and Wire Company. This corporation will have an authorized capital stock of $90,000,000, of which $40,000,000 will be seven per cent. cumulative preferred stock, and $50,000,000 will be common stock.

This Corporation will acquire the above properties either by direct ownership or through the ownership of no less than a majority of the capital stock, where it is not practicable to purchase the properties themselves.

A syndicate has been formed, which will furnish the necessary capital for the above purchases, and in addition thereto provide the new Company with a working capital of about $13,000,000 exclusive of the working capital of the several concerns which will enter the new corporation. Whatever may be necessary of this working capital may be used for the purchase of other properties, which may be agreed upon hereafter, the entire amount of capital to be furnished by the syndicate being $28,000,000.

The syndicate agreements will provide that the New Jersey company shall acquire such of the capital stock of the American Steel and Wire Company of Illinois, not less than a majority thereof, however, as may be offered, on the following basis:

For each share of the preferred stock of the Illinois corporation the holder thereof shall receive one share of the seven per cent. cumulative preferred stock of the New Jersey Corporation and in addition thereto six-tenths of one share of the common stock of the New Jersey corporation; for each share of the common stock of the Illinois corporation the holder thereof shall receive one and two-tenths shares of the common stock of the New Jersey corporation. It is further arranged that the banking house of J. & W. Seligman & Co. of New York City, or its agent for that purpose (the Illinois Trust and Savings Bank, of Chicago, Ill.) will exchange the certificates of the American Steel and Wire Company of Illinois, on the above named basis, provided the same are presented and deposited at either of the offices above named on or before Tuesday, January 17, 1899; that in event of delay in issuing the certificates of the New Jersey corporation, interim certificates will be issued exchangeable for the engraved certificates when issued: The interim certificates will be issued by either J. W. Seligman & Co. at New York, or their agents the Illinois Trust and Savings Bank, at Chicago.

It is very desirable that the fiscal year of New Jersey corporation commence on January 1, 1899, and to that end the plan must be consummated at the earliest possible date; therefore the stockholders in the American Steel and Wire Company, of Illinois, are requested to present and deposit their stock promptly, so that the same may be speedily and without delay exchanged, and the organization of the New Jersey company facilitated.

Books of transfer of the American Steel and Wire Company, of Illinois, were closed on Wednesday, January 4th, 1899, and will not be reopened until about January 25th, 1899, and the books of the New Jersey corporation will be opened as soon as the engraved certificates are ready for delivery, not later, however, it is believed, than January 25th, 1899.

It is proposed that the new company will declare regular quarterly dividends on the preferred stock of one and three-quarters per cent., beginning about April 1st, 1899.

The undersigned, comprising the entire Board of Directors of the American Steel and Wire Company, of Illinois, after a careful consideration, believing that the consummation of the plan proposed will increase earnings, decrease expenses, result in a more stable cost of manufacture and more satisfactory results to the stockholders, have decided to exchange their own shares in the Illinois Corporation for shares in the New Jersey Corporation, upon the above named basis.

J. W. Gates.
A. Clifford.
I. L. Ellwood.
Chas. Douglass.
Wm. Edenborn.
S. H. Chisholm.
John Lambert.
F. Baackes.
E. H. Gary.
E. J. Buffington.
W. H. Rowe.

---

**Government Exhibit No. 361.**

(January 30, 1913.)

FINANCIAL.

.....

To the Preferred and Common Stockholders of the

AMERICAN STEEL AND WIRE COMPANY.

During several months past the holders of a large portion of the shares of the American Steel and Wire Company have been carefully considering the advisability of obtaining by purchase or reorganization other leading wire concerns in the United States, among them the Cleveland Roll-

ing Mill Company of Cleveland, Ohio, manufacturers of pig iron, Bessemer Steel and open hearth steel, as well as wire in its various forms, and the Washburn & Moen Manufacturing Company, of Worcester, Mass., and Waukegan, Ill.

It is believed that there would result greater economy in management and operation, and thereby be of advantage to all the stockholders of the several companies. After a thorough investigation of the several properties and their values, actual as well as relative, the acquisition of the following plants has been assured upon a just and fair basis:

Washburn & Moen Manufacturing Company, of Worcester, Mass., and Waukegan, Ill.

Worcester Wire Company of Worcester, Mass.

Cleveland Rolling-Mill Company of Cleveland, Ohio.

Oliver & Snyder Steel Co. of Pittsburgh, Pa.

Oliver Wire Company of Pittsburgh, Pa.

Newcastle Wire Nail Company of Newcastle, Pa.

Pittsburgh Wire Company of Pittsburgh, Pa.

Cincinnati Barbed-Wire Fence Company of Cincinnati, Ohio.

Laidlaw Bale and Tie Company of Joliet, Ill., and Kansas City, Mo.

Consolidated Barb-Wire Company of Lawrence, Kan., and Joliet, Ill.

Newburgh Wire and Nail Company of Newburgh, N. Y.

To accomplish the object suggested, the following plan has been agreed upon:

AGREEMENTS HAVE BEEN ENTERED INTO FOR THE ORGANIZATION OF A CORPORATION UNDER THE LAWS OF THE STATE OF NEW JERSEY, TO BE KNOWN AS THE AMERICAN STEEL AND WIRE COMPANY. THIS CORPORATION WILL HAVE AN AUTHORIZED CAPITAL STOCK OF $90,000,000, OF WHICH $40,000,000 WILL BE SEVEN PER CENT. CUMULATIVE PREFERRED STOCK AND $50,000,000 WILL BE COMMON STOCK.

This corporation will acquire the above properties either by direct ownership or through the ownership of not less than a majority of the capital stock, where it is not practicable to purchase the properties themselves.

A SYNDICATE HAS BEEN FORMED WHICH WILL FURNISH THE NECESSARY CAPITAL FOR THE ABOVE PURCHASES, AND IN ADDITION THERETO PROVIDING THE NEW COMPANY WITH A WORKING CAPITAL OF ABOUT $13,000,000, EXCLUSIVE OF THE WORKING CAPITAL OF THE SEVERAL CONCERNS WHICH WILL ENTER THE NEW CORPORATION. WHATEVER MAY BE NECESSARY OF THIS WORKING CAPITAL MAY BE USED FOR THE PURCHASE OF OTHER PROPERTIES WHICH MAY BE AGREED UPON HEREAFTER, THE ENTIRE AMOUNT OF CAPITAL TO BE FURNISHED BY THE SYNDICATE BEING $28,000,000.

The syndicate agreements will provide that the New Jersey Company shall acquire such of the capital stock of the American Steel and Wire Company of Illinois, not less than a majority thereof, however, as may be offered, on the following basis:

For each share of the preferred stock of the Illinois corporation the holder thereof shall receive one share of the seven per cent. cumulative preferred stock of the New Jersey corporation, and in addition thereto six-tenths of one share of the common stock of the New Jersey corporation; for each share of the common stock of the Illinois corporation the holder thereof shall receive one and two-tenths shares of the common stock of the New Jersey corporation. It is further arranged that the banking house of J. & W. SELIGMAN & CO. OF NEW YORK CITY, or its agent for that purpose (THE ILLINOIS TRUST AND SAVINGS BANK OF CHICAGO, ILL.), will exchange the certificates of the American Steel and Wire Company, of Illinois, on the above-named basis, provided the same are presented and deposited at either of the offices above-named on or before TUESDAY, JANUARY 17, 1899; that in event of delay in issuing the certificates of the New Jersey corporation interim certificates will be issued exchangeable for the engraved certificates when issued. The interim certificates will be issued by either J. & W. Seligman & Co. or their agents (the Illinois Trust and Savings Bank at Chicago).

It is very desirable that the fiscal year of the New Jersey corporation commence on January 1, 1899, and to that end the plan must be consummated at the earliest possible date; therefore, the stockholders in the American Steel and Wire Company, of Illinois, are requested to present and deposit

their stock promptly, so that the same may be speedily and without delay exchanged, and the organization of the New Jersey Company facilitated.

Books of transfer of the American Steel and Wire Company, of Illinois, were closed on Wednesday, January 4th, 1899, and will not be reopened until about January 25th, 1899, and the books of the New Jersey corporation will be opened as soon as the engraved certificates are ready for delivery, not later, however, it is believed, than January 25th, 1899.

IT IS PROPOSED THAT THE NEW COMPANY WILL DECLARE REGULAR QUARTERLY DIVIDENDS ON THE PREFERRED STOCK OF ONE AND THREE-QUARTERS PER CENT, BEGINNING ABOUT APRIL 1ST, 1899.

The undersigned, comprising the entire Board of Directors of the American Steel and Wire Company, of Illinois, after a careful consideration, believing that the consummation of the plan proposed will increase earnings, decrease expenses, result in a more stable cost of manufacture, and more satisfactory results to the stockholders, have decided to exchange their own shares in the Illinois corporation for shares in the New Jersey corporation, upon the above-named basis:

J. W. Gates,
A. Clifford,
I. L. Ellwood,
Chas. Douglass.
Wm. Edenborn,
S. H. Chisholm,
John Lambert,
F. Baackes,
E. H. Gary,
E. J. Buffington,
W. H. Rowe.

January 7, 1899.

NEW YORK, JANUARY 7, 1899.

TO THE HOLDERS OF THE PREFERRED AND COMMON STOCK OF AMERICAN STEEL AND WIRE COMPANY:

WE ARE NOW PREPARED TO RECEIVE THE DEPOSIT OF CERTIFICATES OF SAID STOCK, UNDER AN AGREEMENT DATED JANUARY 3, 1899, BETWEEN JOHN W. GATES AND ISAAC L. ELLWOOD AND FREDERICK P. VOORHEES, ISSUING THEREFOR OUR NEGOTIABLE CERTIFICATES OF DEPOSIT, EXCHANGEABLE FOR THE STOCK OF THE AMERICAN STEEL AND WIRE COMPANY (NEW COMPANY) WHEN RECEIVED BY US FOR DELIVERY. ALL STOCK CERTIFICATES TO BE DEPOSITED MUST BE DULY ENDORSED IN BLANK.

NEW YORK CERTIFICATES TO BE PRESENTED AT THE OFFICE OF J. & W. SELIGMAN & CO., 21 BROAD STREET, NEW YORK.

CHICAGO CERTIFICATES TO BE PRESENTED AT THE OFFICE OF THE ILLINOIS TRUST AND SAVINGS BANK, CHICAGO, WHO WILL ISSUE CERTIFICATES OF DEPOSIT THEREFOR, ON OUR BEHALF.

J. & W. SELIGMAN & CO.
Depositary.

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## Government Exhibit No. 362.

(January 30, 1913.)

NOBLE, JACKSON & HUBBARD
COUNSELLORS AT LAW

Herbert Noble
Edwin E. Jackson, Jr.
Louis V. Hubbard
Gordon Gordon

52 William Street.

(Rubber Stamp)
E. E. Jackson, Jr.

---

Sam'l J. Bailey
F. R. Huntington
Chas. MacInnes
Cable Address "Perjac, New York"

NEW YORK, MAY 11, 1909.

H. O. PHILLIPS, ESQ.,
Phillips Insulated Wire Company,
Pawtucket, R. I.

DEAR SIR:—

Yours of May 10th, enclosing copy of circular as to price

issued under date of May 4th by the American Steel & Wire Company, is at hand and noted.

I am very glad to be able to advise you that, as the result of an interview between Mr. Baackes and myself yesterday, instructions have this morning been sent to all the branches of the American Steel & Wire Company to immediately withdraw the circular heretofore issued, and cooperate as to price in the future.

I, personally, feel that a good deal has been accomplished in the way of a better understanding. I would be very glad to talk fuller details over with you when I have the pleasure of seeing you next.

Yours very truly,

(Signed) E. E. JACKSON,
Supervisor.

Dict. E. E. J. . G. E. S.

(Rubber stamp:)
RECEIVED
May 12 1909
Ans.....By....P.....

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**Government Exhibit No. 363.**

(January 30, 1913.)

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(Extract from by-laws of United States Steel Corporation, as amended to January 7, 1902.)

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ARTICLE III.

EXECUTIVE COMMITTEE AND FINANCE COMMITTEE.

SECTION 1. The Board of Directors shall elect from the Directors an *Executive Committee* and a *Finance Committee;* and shall designate for each of those Committees a Chairman, who shall continue to be Chairman of the Committee during the pleasure of the Board of Directors.

The Board of Directors shall fill vacancies in the Executive Committee or in the Finance Committee by election from the Directors; and at all times it shall be the duty of the Board of Directors to keep the membership of each of such Committees full, with due regard to the qualifications for such membership indicated in this Article of the By-Laws.

All action by the Executive Committee, or by the Finance Committee shall be reported by the Board of Directors at its meeting next succeeding such action, and shall be subject to revision or alteration by the Board of Directors; *provided* that no rights or acts of third parties shall be affected by any such revision or alteration.

The Executive Committee and the Finance Committee each shall fix its own rules of proceeding, and shall meet when and as provided by such rules, or by resolution of the Board of Directors, but in every case the presence of a majority shall be necessary to constitute a quorum.

In every case the affirmative vote of a majority of all of the members of the Committee shall be necessary to its adoption of any resolution.

The Chairman and each of the members, of the Executive Committee, shall receive such compensation for their services as from time to time shall be fixed by the Finance Committee and be approved by the Board of Directors.

SECTION 2. *The Executive Committee* shall consist of six members besides the President, and the Chairman of the Finance Committee, each of whom, by virtue of his office, shall be a member of the Executive Committee. So far as practicable, each of the six elected members of the Executive Committee shall be a person having, or, having had, personal experience in the conduct of one or the other of the branches of manufacture or mining, or of transportation in which the Company is interested; and, so far as practicable, the six elected members shall be taken equally from the three classes of Directors. Unless otherwise ordered by the Board of Directors each elected member of the Executive Committee shall continue to be a member thereof until the expiration of his term of office as a Director.

During the intervals between the meetings of the Board of Directors, the Executive Committee shall possess, and may

exercise, all the powers of the Board of Directors in the management and direction of the manufacturing, mining and transportation operations of the Company, and of all other business and affairs (except the matters hereinafter assigned to the Finance Committee) in such manner as the Executive Committee shall deem best for the interests of the Company, in all cases in which specific directions shall not have been given by the Board of Directors.

During the intervals between the meetings of the Executive Committee the Chairman thereof shall possess, and may exercise, such of the powers vested in the Executive Committee as from time to time may be conferred upon him by resolution of the Board of Directors, or of the Executive Committee.

SECTION 3. *The Finance Committee* shall consist of four members, besides the President, and the Chairman of the Executive Committee, each of whom, by virtue of his office, shall be a member of the Finance Committee. So far as practicable each of the four elected members of the Finance Committee shall be a person of experience in matters of finance; and so far as practicable the four elected members shall be taken equally from the three classes of Directors. Unless otherwise ordered by the Board of Directors, each elected member of the Finance Committee shall continue to be a member thereof until the expiration of his term of office as a Director.

The Finance Committee shall have special and general charge and control of all financial affairs of the Company. The General Counsel, the Treasurer, the Comptroller and the Secretary, and their respective offices shall be under the direct control and supervision of the Finance Committee.

During the intervals between the meetings of the Board of Directors, the Finance Committee shall possess, and may exercise, all the powers of the Board of Directors in the management of the financial affairs of the Company, including its purchases of property, and the execution of legal instruments with or without the corporate seal in such manner as said Committee shall deem to be best for the interests of the Company, in all cases in which specific directions shall not have been given by the Board of Directors.

During the intervals between the meetings of the Finance Committee, and subject to its review, the Chairman thereof shall possess, and may exercise any of the powers of the Committee except as from time to time shall be otherwise provided by resolution of the Board of Directors or of the Finance Committee, but not of the Executive Committee.

Except as otherwise provided by the By-Laws, or by resolution of the Board of Directors, all salaries and compensations paid or payable by the Company shall be fixed by the Finance Committee.

No Director shall become a salaried employee of the Company except by special vote of the Finance Committee.

Government Exhibi
January 30,

(Extract from page 6 of pamphlet entitled "The P
in 1911."

PRODUCTION OF IRON ORE IN THE UNITED STATES, BY G

IN LONG T

| District | 1909 | |
|---|---|---|
| | Quantity | Percentage of total |
| Northeastern..... | 2,280,741 | 4.46 |
| Southeastern..... | 6,197,717 | 12.11 |
| Lake Superior..... | 41,942,969 | 81.99 |
| Mississippi Valley..... | 96,428 | .19 |
| Rocky Mountain..... | 637,582 | 1.25 |
| Pacific slope..... | (b) | ..... |
| Total..... | 51,155,437 | 100.00 |

a Figures for 1911 represen
b Pacific slope included in

it No. 364-a
, 1913

Production of Iron Ore, Pig Iron, and Steel
.")

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GEOGRAPHIC DISTRICTS, IN 1909, 1910 AND 1911

TONS

| 1910 | | 1911[a] | |
|---|---|---|---|
| Quantity | Percentage of total | Quantity | Percentage of total |
| 2,605,318 | 4.58 | 1,966,348 | 4.80 |
| 6,894,464 | 12.12 | 5,407,821 | 13.19 |
| 46,420,226 | 81.60 | 32,902,562 | 80.27 |
| 107,876 | .19 | 73,388 | .18 |
| 861,850 | 1.51 | 639,689 | 1.56 |
| (b) | ..... | (b) | ..... |
| 56,889,734 | 100.00 | 40,989,808 | 100.00 |

t marketed production.
Rocky Mountain district.

Government Exhibit No. 364-g
January 30, 1913

(Extract from page 17 of pamphlet entitled "The Production of Iron Ore, Pig Iron, and Steel in 1911.")

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SHIPMENTS OF LAKE SUPERIOR IRON ORE, 1906-1911, IN LONG TONS.[a]

| Shipping port | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 |
|---|---|---|---|---|---|---|
| Escanaba, Mich..... | 5,851,050 | 5,761,988 | 3,351,502 | 5,747,801 | 4,949,726 | 4,278,445 |
| Marquette, Mich..... | 2,791,033 | 3,013,826 | 1,487,487 | 2,909,451 | 3,248,516 | 2,200,380 |
| Ashland, Wis..... | 3,388,106 | 3,436,867 | 2,513,670 | 3,834,207 | 4,094,374 | 2,429,290 |
| Two Harbors. Minn..... | 8,180,125 | 8,188,906 | 5,702,237 | 9,181,132 | 8,271,177 | 6,367,537 |
| Superior, Wis..... | 6,083,057 | 7,440,386 | 3,564,030 | 6,540,505 | 8,414,799 | 9,920,490 |
| Duluth, Minn..... | 11,220,218 | 13,448,736 | 8,808,168 | 13,470,503 | 13,640,166 | 6,934,269 |
| Total by lake..... | 37,513,589 | 41,290,709 | 25,427,094 | 41,683,599 | 42,618.768 | 32,130,411 |
| Total by rail..... | 1,052,173 | 975,959 | 587,893 | 903,270 | 823,639 | 662,719 |
| Total..... | 38,565,762 | 42,266,668 | 26,014,987 | 42,586,869 | 43,442,397 | 32,793,130 |

a Iron Trade Review.

Government Exhibit No. 364-h
January 30, 1913

(Extract from page 18 of pamphlet entitled "The Production of Iron Ore, Pig Iron, and Steel in 1911.")

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IRON-ORE RECEIPTS AT LAKE ERIE PORTS, 1906-1911, IN LONG TONS.[a]

| Port | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 |
|---|---|---|---|---|---|---|
| Toledo | 1,423,741 | 1,314.140 | 680,553 | 1,374,224 | 1,225,202 | 493,345 |
| Sandusky | 35,847 | 83,043 | ..... | 11,088 | ..... | ..... |
| Huron | 778,453 | 971,430 | 213,377 | 243,082 | 197.951 | 223,947 |
| Lorain | 2,191,965 | 2,621,025 | 2,286,388 | 2,796.856 | 2,884,738 | 2,937,605 |
| Cleveland | 6,604,661 | 6,495,998 | 4,240,815 | 6,051,342 | 6,344,943 | 4,584,211 |
| Fairport | 1,861,498 | 2,437,649 | 1,518,961 | 1,734,277 | 1,516,434 | 666,365 |
| Ashtabula | 6,833,352 | 7,521,859 | 3,012,064 | 8,056,941 | 9,620,638 | 6,359,131 |
| Conneaut | 5,432,370 | 5,875,937 | 4,798,631 | 7,007,834 | 6,309,548 | 6,931,278 |
| Erie | 1,986,539 | 2,294,239 | 828,502 | 1,235,057 | 942.592 | 289,400 |
| Buffalo | 4,928,381 | 5,580,438 | 2,835,099 | 5,002,235 | 4,704,439 | 2,802,976 |
| Detroit | ..... | ..... | ..... | 159,889 | 296,412 | 243,292 |
| Total | 32,076,757 | 35,195,758 | 20,414,491 | 33,672,825 | 34,042,897 | 25,531,550 |

a Iron Trade Review.

Government Exhibit No. 364-1
January 30, 1913



(Extract from pages 20 and 21 of pamphlet entitled "The Production of Iron Ore, Pig Iron, and Steel in 1911.")

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## FOREIGN TRADE IN IRON ORE.

### IMPORTS.

The quantity of iron ore imported into the United States in 1911 was 1,811,732 long tons, valued at $5,412,636, or $2.99 per ton. This represents a decrease in quantity of 779,299 tons (30 per cent) and in value of $2,419,589, as compared with the imports during 1910, which were 2,591,031 long tons, valued at $7,832,225, or $3.02 per ton. The imports in 1910 increased 53 per cent over those of 1909, and the sudden checking of the imports in 1911 indicates how closely the course of imports parallels the local production. As to the source of the imports in 1911, Cuba produced 63 per cent of the ore, Sweden 12 per cent, Spain 11 per cent, Newfoundland and Labrador 10 per cent, Canada 3 per cent, with minor quantities from Greece, French Africa, Great Britain, the Netherlands, and other countries.

The statistics of imports of iron ore are furnished by the Bureau of Statistics, Department of Commerce and Labor, and the following table gives the imports from the various countries from 1908 to 1911:

QUANTITY AND VALUE OF IRON ORE IMPORTED INTO THE UNITED STATES IN THE CALENDAR YEARS 1908-1911, BY COUNTRIES, IN LONG TONS.

| Country | 1908 | | 1909 | | 1910 | | 1911 | |
|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Cuba | 579,668 | $1,756,091 | 927,774 | $2,681,028 | 1,451,096 | $4,459,789 | 1,147,879 | $3,218,485 |
| Spain | 126,074 | 331,070 | 291,547 | 664,460 | 439,868 | 1,040,589 | 194,965 | 502,453 |
| French Africa | ..... | ..... | 37,208 | 67,515 | 15,471 | 36,791 | 4,443 | 13,068 |
| Greece | 4,850 | 5,311 | 19,080 | 21,782 | 39,060 | 71,951 | 13,200 | 18,888 |
| Newfoundland and Labrador | 48,285 | 48,285 | 224,395 | 330,056 | 209,006 | 343,892 | 174,853 | 286,997 |
| United Kingdom | 2,028 | 32,027 | 869 | 12,846 | 11,388 | 52,591 | 1,436 | 19,725 |
| Germany | 602 | 4,052 | 3 | 100 | 3 | 58 | 2 | 76 |
| Netherlands | ..... | ..... | ..... | ..... | ..... | ..... | 223 | 420 |
| Canada | 5,013 | 16,321 | 27,155 | 84,613 | 95,005 | 251,086 | 50,480 | 106,038 |
| Belgium | 1 | 28 | 3 | 179 | 158 | 644 | ..... | ..... |
| Russia in Europe | ..... | ..... | 32,010 | 62,418 | 12,570 | 48,279 | ..... | ..... |
| Sweden | 4,617 | 15,783 | 120,564 | 627,315 | 259,911 | 1,391,976 | 219,238 | 1,215,588 |
| Other countries | 5,760 | 15,280 | [a] 14,349 | 26,766 | [b] 57,495 | 134,579 | 5,013 | 30,898 |
| Total | 776,898 | 2,224,248 | 1,694,957 | 4,579,078 | 2,591,031 | 7,832,225 | 1,811,732 | 5,412,636 |

a Other countries in 1909; Colombia and Mexico.
b Other countries in 1910; Chinese Empire, Colombia, Egypt, British South Africa, etc.

Government Exhibit No. 364-j
January 30, 1913

(Extract from page 23 of pamphlet entitled "The Production of Iron Ore, Pig Iron, and Steel in 1911.")

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IRON ORE INDUSTRY OF CUBA.

The iron ores which were mined in Cuba prior to 1910 consisted largely of hematite and magnetite and were obtained near Santiago, in the Province of Oriente (Santiago) Recently large deposits of brown ore have been attracting considerable attention, especially those of the Mayari and the Moa fields, in Oriente Province, and those of the Cubitas field, in Camaguey Province. There was a considerable production of brown ore in 1910 and 1911 from Mayari field, in Oriente. Several interesting papers were published by the American Institute of Mining Engineers on Cuban iron ores in 1911, and these are listed in the bibliography at the end of this chapter.

The following table shows the shipments of iron ore from Cuba since the opening of the mines in 1884. The statistics of the Cuban iron-ore shipments were collected by the United States Geological Survey.

SHIPMENTS OF IRON ORE FROM MINES IN THE PROVINCE OF ORIENTE (SANTIAGO), CUBA, 1884-1911, IN LONG TONS

| Year | Juragua Iron Co. (Ltd.). | Sigua Iron Co | Spanish-American Iron Co. | Cuban Steel Ore Co. | Ponupo Manganese Co. | Total |
|---|---|---|---|---|---|---|
| 1884..... | 25,295 | ..... | ..... | ..... | ..... | 25,295 |
| 1885..... | 80,716 | ..... | ..... | ..... | ..... | 80,716 |
| 1886..... | 112,074 | ..... | ..... | ..... | ..... | 112,074 |
| 1887..... | 94,240 | ..... | ..... | ..... | ..... | 94,240 |
| 1888..... | 206,061 | ..... | ..... | ..... | ..... | 206,061 |
| 1889..... | 260,291 | ..... | ..... | ..... | ..... | 260,291 |
| 1890..... | 363,842 | ..... | ..... | ..... | ..... | 363,842 |
| 1891..... | 264,262 | ..... | ..... | ..... | ..... | 264,262 |
| 1892..... | 335,236 | 6,418 | ..... | ..... | ..... | 341,654 |
| 1893..... | 337,155 | 14,020 | ..... | ..... | ..... | 351,175 |
| 1894..... | 156,826 | ..... | ..... | ..... | ..... | 156,826 |
| 1895..... | 307,503 | ..... | 74,991 | ..... | ..... | 382,494 |
| 1896..... | 298,885 | ..... | 114,110 | ..... | ..... | 412,995 |
| 1897..... | a248,256 | ..... | b206,029 | ..... | ..... | 454,285 |
| 1898..... | 83,696 | ..... | 84,643 | ..... | ..... | 168,339 |
| 1899..... | 161,783 | ..... | 215,406 | ..... | ..... | 377,189 |
| 1900..... | 154,871 | ..... | 292,001 | ..... | ..... | 446,872 |
| 1901..... | 199,764 | ..... | c334,833 | 17,651 | ..... | 552,248 |
| 1902..... | 221,039 | ..... | 455,105 | 23,590 | ..... | 699,734 |
| 1903..... | 155,898 | ..... | 467,723 | ..... | ..... | 623,621 |
| 1904..... | 31,162 | ..... | 356,111 | ..... | ..... | 387,273 |
| 1905..... | 139,828 | ..... | 421,331 | ..... | ..... | 561,159 |
| 1906..... | 133,379 | ..... | 507,195 | ..... | ..... | 640,574 |
| 1907..... | 181,063 | ..... | 500,330 | ..... | ..... | 681,393 |
| 1908..... | 366,580 | ..... | 452,854 | ..... | ..... | 819,434 |
| 1909..... | 356,659 | ..... | 514,066 | ..... | 59,721 | 930,446 |
| 1910..... | 312,814 | ..... | 934,092 | ..... | 165,008 | 1,417,914 |
| 1911..... | 355,132 | ..... | 1,216,520 | ..... | 168,074 | 1,739,726 |

a Of this quantity, 5,932 tons were sent to Pictou, Nova Scotia.
b Of this quantity, 51,537 tons were sent to foreign ports.
c Of this quantity, 12,691 tons were sent to foreign ports.

Government Exhibit No. 365-a
January 30, 1913

(Extract from page 8 of pamphlet entitled "The Production of Iron Ore, Pig Iron, and Steel in 1909.")

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PRODUCTION OF IRON ORE IN THE UNITED STATES IN 1908 AND 1909, BY STATES AND VARIETIES, IN LONG TONS

1908

| State | Hematite | Brown ore | Magnetite | Carbonate | Total quantity |
|---|---|---|---|---|---|
| Alabama | 2,775,903 | 958,535 | ..... | ..... | 3,734,438 |
| Colorado | ..... | 10,176 | ..... | ..... | 10,176 |
| Connecticut and Massachusetts | ..... | 28,112 | ..... | ..... | 28,112 |
| Georgia | 1,248 | 319,812 | ..... | ..... | 321,060 |
| Kentucky, Maryland and West Virginia | 7,491 | 45,744 | ..... | ..... | 53,235 |
| Michigan | 8,839,199 | ..... | ..... | ..... | 8,839,199 |
| Minnesota | 18,652,220 | ..... | ..... | ..... | 18,652,220 |
| Missouri | 77,400 | 21,014 | ..... | ..... | 98,414 |
| Montana, Nevada, New Mexico, Utah, Washington, and Wyoming | 354,012 | 68,565 | 95,872 | ..... | 518,449 |
| New Jersey | ..... | (a) | a394,767 | ..... | 394,767 |
| New York | 33,825 | ..... | 663,648 | ..... | 697,473 |
| North Carolina | ..... | ..... | 48,522 | ..... | 48,522 |
| Ohio | ..... | ..... | ..... | 26,585 | 26,585 |
| Pennsylvania | 26,162 | 73,001 | 343,998 | ..... | 443,161 |
| Tennessee | 226,038 | 409,305 | ..... | ..... | 635,343 |
| Texas | ..... | 55,966 | ..... | ..... | 55,966 |
| Virginia | 64,323 | 626,910 | 990 | ..... | 692,223 |
| Wisconsin | 730,743 | 3,250 | ..... | ..... | 733,993 |
| Total | 31,788,564 | 2,620,390 | 1,547,797 | 26,585 | 35,983,336 |

1909

| | | | | | |
|---|---|---|---|---|---|
| Alabama | 3,176,416 | 1,144,836 | ..... | ..... | 4,321,252 |
| Colorado | ..... | 10,000 | ..... | ..... | 10,000 |
| Connecticut and Massachusetts | ..... | 38,272 | ..... | ..... | 38,272 |
| Georgia | 9,521 | 211,495 | ..... | ..... | 221,016 |
| Kentucky, Maryland and West Virginia | 45,000 | 53,657 | ..... | ..... | 98,657 |
| Michigan | 11,900,384 | ..... | ..... | ..... | 11,900,384 |
| Minnesota | 28,975,149 | ..... | ..... | ..... | 28,975,149 |
| Missouri | 67,391 | 22,563 | ..... | ..... | 89,954 |
| Montana, Nevada, New Mexico, Utah, Washington, and Wyoming | 542,744 | 143,834 | 79,838 | ..... | 766,416 |
| New Jersey | ..... | (a) | a543,720 | ..... | 543,720 |
| New York | 53,187 | ..... | 962,146 | ..... | 1,015,333 |
| North Carolina | ..... | ..... | 61,150 | ..... | 61,150 |
| Ohio | ..... | ..... | ..... | 16,527 | 16,527 |
| Pennsylvania | 5,144 | 80,715 | 581,030 | ..... | 666,889 |
| Tennessee | 298,818 | 358,977 | ..... | ..... | 657,795 |
| Texas | ..... | 6,474 | ..... | ..... | 6,474 |
| Virginia | 72,955 | 762,937 | 1,955 | ..... | 837,847 |
| Wisconsin | 1,061,931 | 5,505 | ..... | ..... | 1,067,436 |
| Total | 46,208,640 | 2,839,265 | 2,229,839 | 16,527 | 51,294,271 |

a Brown ore is included in magnetite.

GEO

Government Exhibit No. 365-b
January 30, 1913

(Extract from page 9 of pamphlet entitled "The Production of Iron Ore, Pig Iron, and Steel in 1909.")

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PRODUCTION OF IRON ORE IN THE UNITED STATES, BY MINING DISTRICTS AND VARIETIES, IN 1909, IN LONG TONS

| District | Hematite | Brown ore | Magnetite | Carbonate | Total |
|---|---|---|---|---|---|
| Lake Superior | 41,863,635 | ..... | ..... | ..... | 41,863,635 |
| Birmingham | 2,955,246 | 508,843 | ..... | ..... | 3,464,089 |
| Chattanooga | 465,494 | 487,988 | ..... | ..... | 953,482 |
| Adirondack | (a) | ..... | [a]869,185 | ..... | 869,185 |
| Northern New Jersey and southeastern New York | ..... | (b) | [b]634,069 | ..... | 634,069 |
| Other | 914,001 | 1,842,434 | 736,849 | 16,527 | 3,509,811 |
| Total | 46,198,376 | 2,839,265 | 2,240,103 | 16,527 | 51,294,271 |

a Hematite is included in magnetite.

b Brown ore is included in magnetite

Government Exhibit No. 366-a
January 30, 1913

(Extract from page 8 of pamphlet entitled "The Production of Iron Ores, Pig Iron, and Steel in 1908.")

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PRODUCTION OF IRON ORE IN THE UNITED STATES, BY COMMERCIAL DISTRICTS, IN 1906, 1907 AND 1908

IN LONG TONS

| District | 1906 | | 1907 | | 1908 | |
|---|---|---|---|---|---|---|
| | Quantity | Percentage of total | Quantity | Percentage of total | Quantity | Percentage of total |
| Northeastern..... | 2,582,666 | 5.41 | 2,822,822 | 5.46 | 1,590,098 | 4.42 |
| Southeastern..... | 6,208,140 | 13.00 | 6,197,360 | 11.98 | 5,484,821 | 15.24 |
| Lake Superior..... | 38,035,084 | 79.65 | 41,638,744 | 80.51 | 28,225,412 | 78.44 |
| Mississippi Valley..... | 117,570 | .25 | 230,435 | .44 | 154,380 | .43 |
| Rocky Mountain..... | 806,268 | 1.69 | 831,258 | 1.61 | 528,625 | 1.47 |
| Pacific Slope..... | (b) | ..... | (b) | ..... | (b) | ..... |
| | 47,749,728 | 100.00 | 51,720,619 | 100.00 | 35,983,336 | 100.00 |

a Hayes, C. W., Iron ores of the United States: Rept. National Conservation Commission, Sen. Doc. No. 676, 60th Cong., 2d sess., 1908. See also Bull. U. S. Geol. Survey No. 394, 1909, pp. 70-113.
b Included in Rocky Mountain district.

Government Exhibit No. 366-b
January 30, 1913

(Extract from page 11 of pamphlet entitled "The Production of Iron Ores, Pig Iron, and Steel in 1908.")

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PRODUCTION OF IRON ORE IN THE UNITED STATES, BY MINING DISTRICTS AND VARIETIES, IN 1908, IN LONG TONS

| District | Hematite | Brown ore | Magnetite | Carbonate | Total |
|---|---|---|---|---|---|
| Mesabi | 17,725,014 | ..... | ..... | ..... | 17,725,014 |
| Marquette | 3,309,917 | ..... | ..... | ..... | 3,309,917 |
| Gogebic | 3,241,931 | ..... | ..... | ..... | 3,241,931 |
| Menominee [a] | 2,904,011 | ..... | ..... | ..... | 2,904,011 |
| Birmingham | 2,597,651 | ..... | ..... | ..... | 2,597,651 |
| Vermillion | 927,206 | ..... | ..... | ..... | 927,206 |
| Adirondack | (b) | ..... | [b]604,697 | ..... | 604,697 |
| Northern New Jersey and southeastern New York | ..... | (c) | [c]455,118 | ..... | 455,118 |
| Other | 1,081,434 | 2,620,390 | 489,382 | 26,585 | 4,217,791 |
| | 31,787,164 | 2,620,390 | 1,549,197 | 26,585 | 35,983,336 |

a Includes Crystal Falls, Florence and Iron River districts.
b Hematite is included in magnetite.
c Brown ore is included in magnetite.

Government Exhibit No. 367-a
January 30, 1913

(Extract from page 10 of pamphlet entitled "The Production of Iron Ores, Pig Iron, and Steel in 1907.")

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RODUCTION OF IRON ORE IN THE UNITED STATES IN 1906 AND 1907, BY STATES AND VARIETIES, IN LONG TONS

1906

| State | Brown ore | Red hematite | Magnetite | Carbonate | Total quantity |
|---|---|---|---|---|---|
| labama | 821,301 | 3,173,797 | ..... | ..... | 3,995,098 |
| rkansas and Texas | a 36,660 | ..... | ..... | ..... | 36,660 |
| olorado | 14,078 | ..... | ..... | ..... | 14,078 |
| onnecticut and Massachusetts | 31,343 | ..... | ..... | ..... | 31,343 |
| eorgia | 305,624 | 105,606 | ..... | ..... | 411,230 |
| entucky, Maryland and West Virginia | 18,895 | 27,433 | ..... | 612 | 46,940 |
| ichigan | ..... | 11,822,874 | ..... | ..... | 11,822,874 |
| innesota | ..... | 25,364,077 | ..... | ..... | 25,364,077 |
| issouri | 41,805 | 39,105 | ..... | ..... | 80,910 |
| ontana, Nevada, New Mexico, Utah, and Wyoming | ..... | b 620,635 | 171,555 | ..... | c 792,190 |
| ew Jersey | 20,611 | ..... | 521,907 | ..... | 542,518 |
| ew York | 1,000 | 128,385 | 912,607 | ..... | 1,041,992 |
| orth Carolina | ..... | ..... | 56,057 | ..... | 56,057 |
| hio | ..... | ..... | ..... | 17,384 | 17,384 |
| ennsylvania | 134,027 | 8,854 | 806,548 | ..... | 949,929 |
| ennessee | 590,763 | 279,971 | ..... | ..... | 870,734 |
| irginia | 735,204 | 92,357 | 620 | ..... | 828,081 |
| isconsin | 29,752 | 818,381 | ..... | ..... | 848,133 |
| Total | 2,781,063 | 42,481,375 | 2,469,294 | 17,996 | 47,749,728 |

1907

| | | | | | |
|---|---|---|---|---|---|
| labama | 895,442 | 3,144,011 | ..... | ..... | 4,039,453 |
| rkansas and Texas | 118,667 | ..... | ..... | ..... | 118,667 |
| olorado | 11,714 | ..... | ..... | ..... | 11,714 |
| onnecticut and Massachusetts | 37,166 | ..... | ..... | ..... | 37,166 |
| eorgia | 337,229 | 106,885 | ..... | ..... | 444,114 |
| entucky, Maryland and [illegible]est Virginia | 26,808 | 36,000 | ..... | ..... | 62,808 |
| ichigan | ..... | 11,830,342 | ..... | ..... | 11,830,342 |
| innesota | ..... | 28,969,658 | ..... | ..... | 28,969,658 |
| [illegible]issouri | d 69,241 | 42,527 | ..... | ..... | 111,768 |

Government Exhibit No. 387-b
January 30, 1913

(Extract from page 15 of pamphlet entitled "The Production of Iron Ores, Pig Iron, and Steel in 1907.")

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PRODUCTION OF IRON ORE AND PIG IRON IN THE UNITED STATES, 1889-1907, IN LONG TONS

| Year | Iron ore mined | Pig iron produced[a] | Year | Iron ore mined | Pig iron produced[a] |
|---|---|---|---|---|---|
| 1889..... | 14,518,041 | 7,603,642 | 1899..... | 24,683,173 | 13,620,703 |
| 1890..... | 16,036,043 | 9,202,703 | 1900..... | 27,553,161 | 13,789,242 |
| 1891..... | 14,591,178 | 8,279,870 | 1901..... | 28,887,479 | 15,878,354 |
| 1892..... | 16,296,868 | 9,157,000 | 1902..... | 35,554,135 | 17,821,307 |
| 1893..... | 11,587,629 | 7,124,502 | 1903..... | 35,019,308 | 16,009,252 |
| 1894..... | 11,879,679 | 6,657,388 | 1904..... | 27,644,330 | 16,497,033 |
| 1895..... | 15,957,614 | 9,446,308 | 1905..... | 42,526,133 | 22,992,380 |
| 1896..... | 16,005,449 | 8,623,127 | 1906..... | 47,749,728 | 25,307,191 |
| 1897..... | 17,518,046 | 9,652,680 | 1907..... | 51,720,619 | 25,781,361 |
| 1898..... | 19,433,716 | 11,773,934 | | | |

a From annual reports of the American Iron and Steel Association.

Government Exhibit No. 367-c
January 30, 1913

(Extract from page 33 of pamphlet entitled "The Production of Iron Ores, Pig Iron, and Steel in 1907.")

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IMPORTS

During 1907 the United States imported over 1,200,000 long tons of iron ore. Of this total, over half was from Cuba and about a third from Spain. About 116,000 tons came from British North America, and the remainder was from numerous smaller sources of supply. Among the years changes in these smaller imports may be noted the appearance of Algiers and the cessation of shipments from Norway and British India.

The table following shows the imports, by countries, from 1904 to 1907, inclusive:

QUANTITY AND VALUE OF IRON ORES IMPORTED INTO THE UNITED STATES, 1904-1907, BY COUNTRIES, IN LONG TONS

| Country | 1904 | | 1905 | | 1906 | | 1907 | |
|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Cuba | 364,630 | $822,413 | 539,935 | $1,437,900 | 639,362 | $2,178,997 | 657,133 | $2,522,710 |
| Spain | 36,810 | 89,218 | 191,861 | 366,436 | 171,870 | 418,922 | 296,318 | 760,801 |
| French Africa | ..... | ..... | ..... | ..... | ..... | ..... | 65,940 | 252,897 |
| Greece | 2,500 | 2,535 | ..... | ..... | 48,630 | 61,560 | 23,800 | 42,927 |
| Newfoundland and Labrador | 5,400 | 5,400 | 5,600 | 5,600 | [a]125,395 | 125,395 | 89,685 | 97,735 |
| United Kingdom | 173 | 2,093 | 408 | 2,396 | 231 | 1,955 | 5,765 | 16,491 |
| Germany | 2 | 70 | 1 | 42 | 1,084 | 8,949 | 273 | 2,096 |
| Netherlands | 1 | 10 | ..... | ..... | 50 | 474 | 500 | 3,673 |
| Quebec, Ontario, etc | 77,887 | 177,966 | 104,096 | 240,303 | 57,890 | 100,125 | 26,878 | 51,328 |
| Belgium | 210 | 1,671 | 400 | 3,370 | 400 | 6,662 | 125 | 1,102 |
| France | ..... | 8 | ..... | ..... | ..... | ..... | ..... | ..... |
| Norway | ..... | ..... | ..... | ..... | 9,278 | 37,240 | ..... | ..... |
| East Indies--British India | ..... | ..... | ..... | ..... | 6,200 | 27,155 | ..... | ..... |
| Other countries | ..... | ..... | 3,350 | 6,114 | ..... | ..... | 62,751 | 185,723 |
| Total | 487,613 | 1,101,384 | 845,651 | 2,062,161 | 1,060,390 | 2,967,434 | 1,229,168 | 3,937,483 |

a Newfoundland only.

Covernment Exhibit No. 368-a
January 30, 1913

(Extract from page 8 of pamphlet entitled "The Production of Iron Ores in 1905.")

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PRODUCTION OF IRON ORE IN THE UNITED STATES IN 1905, BY STATES AND VARIETIES.
(Long tons.)

| State | Red hematite | Brown hematite | Magnetite | Carbonate | Total |
|---|---|---|---|---|---|
| Minnesota | 21,735,182 | ..... | ..... | ..... | 21,735,182 |
| Michigan | 10,885,902 | ..... | ..... | ..... | 10,885,902 |
| Alabama | 2,974,413 | 781,561 | 26,857 | ..... | 3,782,831 |
| New York | 80,020 | 9,266 | 1,050,651 | ..... | 1,139,937 |
| Wisconsin | 842,976 | 16,307 | ..... | ..... | 859,283 |
| Pennsylvania | 4,425 | 166,435 | 637,857 | ..... | 808,717 |
| Virginia and West Virginia | 35,357 | 716,170 | 518 | ..... | 752,045 |
| Tennessee | 272,996 | 461,774 | ..... | ..... | 734,770 |
| Montana, Nevada, New Mexico, Texas, Utah, and Wyoming | 557,619 | 38,521 | 118,838 | ..... | 714,978 |
| New Jersey | ..... | ..... | 526,271 | ..... | 526,271 |
| Georgia and North Carolina | 45,408 | 155,434 | 56,282 | ..... | 257,124 |
| Colorado | 2,154 | 131,317 | ..... | ..... | 133,471 |
| Missouri | 78,746 | 34,266 | ..... | ..... | 113,012 |
| Connecticut and Massachusetts | ..... | 25,931 | ..... | ..... | 25,931 |
| Kentucky and Iowa | 25,000 | 100 | ..... | ..... | 25,100 |
| Ohio | ..... | ..... | ..... | 19,989 | 19,989 |
| Maryland | ..... | 6,259 | ..... | 2,010 | 8,269 |
| Arkansas | ..... | 3,321 | ..... | ..... | 3,321 |
| Total | 37,540,198 | 2,546,662 | 2,417,274 | 21,999 | 42,526,133 |

Government Exhibit No. 368-b
January 30, 1913

(Extract from page 29 of pamphlet entitled "The Production of Iron Ores in 1905.")

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LAKE SHIPMENTS OF IRON ORE, 1900-1905.

(Long tons.)

| Shipping port | 1900 | 1901 | 1902 | 1903 | 1904 | 1905 |
|---|---|---|---|---|---|---|
| Two Harbors..... | 4,007,294 | 5,018,197 | 5,605,185 | 5,120,656 | 4,566,542 | 7,779,850 |
| Escanaba..... | 3,436,734 | 4,022,668 | 5,413,704 | 4,277,561 | 3,644,267 | 5,307,911 |
| Duluth..... | 3,888,986 | 3,437,955 | 5,598,408 | 5,356,473 | 4,649,611 | 8,807,559 |
| Ashland..... ..... | 2,633,687 | 2,886,252 | 3,553,919 | 2,823,119 | 2,288,400 | 3,485,344 |
| Marquette..... | 2,661,861 | 2,354,284 | 2,595,010 | 2,007,346 | 1,907,301 | 2,977,288 |
| Superior..... | 1,522,899 | 2,321,077 | 4,180,568 | 3,978,579 | 4,169,990 | 5,118,385 |
| Gladstone..... | 418,854 | 117,089 | 92,375 | 85,816 | 553 | ..... |
| Total..... | 18,570,315 | 20,157,522 | 27,039,169 | 23,649,550 | 21,226,664 | 33,476,337 |
| All-rail shipments. | 489,078 | 431,715 | 531,952 | 632,045 | 548,253 | 765,161 |
| Grand total.... | 19,059,393 | 20,589,237 | 27,571,121 | 24,281,595 | 21,774,917 | 34,241,498 |

Government Exhibit No. 368-c
January 30, 1913

(Extract from page 29 of pamphlet entitled "The Production of Iron Ores in 1905.")

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IRON-ORE RECEIPTS AT LAKE ERIE PORTS, 1900-1905.

(Long tons.)

| Port | 1900 | 1901 | 1902 | 1903 | 1904 |
|---|---|---|---|---|---|
| Ashtabula, Ohio..... | 3,709,486 | 3,981,170 | 4,796,805 | 4,242,160 | 3,639,250 |
| Cleveland, Ohio..... | 3,376,644 | 3,831,060 | 4,873,318 | 4,434,160 | 3,572,228 |
| Conneaut, Ohio..... | 2,556,631 | 3,181,019 | 4,300,301 | 3,903,937 | 4,083,655 |
| Buffalo and Tonawanda, N. Y.. | 1,616,919 | 1,475,386 | 2,256,798 | 2,149,901 | 2,433,601 |
| Erie, Pa..... | 1,240,715 | 1,379,377 | 1,717,268 | 1,257,798 | 1,284,778 |
| Fairport, Ohio..... | 1,085,554 | 1,181,776 | 1,538,744 | 1,434,342 | 1,157,858 |
| Toledo, Ohio..... | 645,147 | 798,298 | 1,037,571 | 652,305 | 508,793 |
| Lorain, Ohio..... | 1,090,235 | 731,662 | 1,442,417 | 990,490 | 972,931 |
| Huron, Ohio..... | 321,914 | 431,311 | 520,646 | 486,106 | 231,364 |
| Sandusky, Ohio..... | 154,542 | 33,017 | 165,556 | 130,532 | 48,356 |
| Total..... | 15,797,787 | 17,014,076 | 22,649,424 | 19,681,731 | 17,932,814 |

Government Exhibit No. 368-d
January 30, 1913

(Extract from page 31 of pamphlet entitled "The Production of Iron Ores in 1905.")

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STOCKS OF IRON ORE AT LOWER LAKE PORTS, DECEMBER 1, 1900-1905

(Long tons.)

| Port | At close of navigation, December 1-- | | | | | |
|---|---|---|---|---|---|---|
| | 1900 | 1901 | 1902 | 1903 | 1904 | 1905 |
| Ashtabula, Ohio..... | 1,811,459 | 1,769,145 | 1,967,136 | 1,911,911 | 1,403,575 | 1,909,495 |
| Cleveland, Ohio..... | 1,337,445 | 1,378,060 | 1,500,604 | 1,337,750 | 1,237,033 | 1,330,619 |
| Fairport, Ohio..... | 611,717 | 710,590 | 924,236 | 845,946 | 660,420 | 759,961 |
| Erie, Pa..... | 480,734 | 470,718 | 722,966 | 657,409 | 583,439 | 564,961 |
| Lorain, Ohio..... | 251,838 | 195,863 | 328,304 | 288,581 | 299,504 | 271,695 |
| Conneaut, Ohio..... | 630,514 | 604,106 | 673,679 | 591,364 | 684,487 | 976,976 |
| Toledo, Ohio..... | 242,375 | 254,196 | 310,023 | 106,710 | 318,573 | 368,024 |
| Huron, Ohio..... | 211,377 | 231,501 | 232,764 | 253,249 | 182,495 | 208,023 |
| Buffalo, N. Y..... | 232,100 | 198,100 | 319,367 | 282,890 | 318,739 | 315,780 |
| Sandusky, Ohio..... | 95,111 | 47,384 | 95,175 | 95,275 | 75,134 | 52,977 |
| Total..... | 5,904,670 | 5,859,663 | 7,074,254 | 6,371,085 | 5,763,399 | 6,758,511 |

Government Exhibit No. 368-e
January 30, 1913

(Extract from page 31 of pamphlet entitled "The Production of Iron Ores in 1905.")

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STOCKS OF IRON ORE AT LOWER LAKE PORTS, MAY 1, 1901-1906

(Long tons.)

| Port | At opening of navigation, May 1-- | | | | | |
|---|---|---|---|---|---|---|
| | 1901 | 1902 | 1903 | 1904 | 1905 | 1906 |
| Ashtabula..... | 1,046,974 | 924,742 | 1,073,967 | 1,559,028 | 623,451 | 462,564 |
| Cleveland, Ohio..... | 806,119 | 624,865 | 829,347 | 869,508 | 513,559 | 350,382 |
| Fairport, Ohio..... | 306,706 | 472,325 | 555,709 | 579,677 | 390,869 | 266,162 |
| Erie, Pa..... | 225,412 | 223,972 | 426,744 | 474,275 | 236,414 | 169,488 |
| Lorain, Ohio..... | 140,562 | 96,992 | 190,311 | 237,404 | 165,586 | 140,452 |
| Conneaut, Ohio..... | 69,755 | 152,891 | 125,400 | 128,018 | 96,296 | 148,528 |
| Toledo, Ohio..... | 138,457 | 111,511 | 126,331 | 160,216 | 71,642 | 52,550 |
| Huron, Ohio..... | 135,043 | 129,635 | 147,817 | 208,008 | 68,100 | 80,738 |
| Buffalo, N. Y..... | 118,007 | 73,861 | 60,241 | 150,106 | 61,271 | 90,906 |
| Sandusky, Ohio..... | 63,148 | 37,400 | 56,500 | 68,863 | 44,444 | 29,320 |
| Total..... | 3,050,183 | 2,848,194 | 3,592,367 | 4,534,103 | 2,271,631 | 1,791,090 |

Government Exhibit No. 369
January 30, 1913

Extract from page 12 of pamphlet entitled "Statistics of the American Iron Trade for 1904

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SHIPMENTS OF IRON ORE FROM LEADING DISTRICTS, 1902-1904.

(Long tons.)

| District | 1902 | 1903 | |
|---|---|---|---|
| Lake Superior mines of Michigan and Wisconsin | 12,144,018 | [a]9,720,637 | |
| Vermillion and Mesabi mines of Minnesota | 15,427,103 | 14,569,241 | |
| Missouri mines | 65,645 | 57,477 | |
| Cornwall mines, Pennsylvania | 594,177 | 401,469 | |
| New Jersey mines | 399,984 | 472,490 | |
| Chateaugay mines, on Lake Champlain, N. Y. | 83,688 | 65,707 | |
| Port Henry mines, N. Y. | 365,437 | 373,565 | |
| Salisbury region, Connecticut | 23,276 | 24,255 | |
| Cranberry mines, North Carolina | 30,810 | 60,108 | |
| Tennessee Coal, Iron and Railroad Company's Inman mines in Tennessee | 4,948 | 24,347 | |
| The same company's mines in Alabama | 1,276,969 | 1,302,207 | |
| Total of the above districts | 30,416,055 | 27,071,503 | |

a Includes 17,913 tons shipped from the Iron Ridge mine in 1903, and 19,558 tons shipped fr
Ridge mine and 47,922 tons from the Baraboo district in 1904.